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1930

U. S. TREASURY DEPARTMENT
PUBLIC HEALTH SERVICE

MANUAL
· OF ·
HOSPITAL MANAGEMENT
· FOR ·
U. S. MARINE HOSPITALS

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U. S. TREASURY DEPARTMENT
ANDREW W. MELLON, *Secretary*
PUBLIC HEALTH SERVICE
HUGH S. CUMMING, *Surgeon General*

MANUAL

OF

HOSPITAL MANAGEMENT

FOR

U. S. MARINE HOSPITALS

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By

M. H. FOSTER, *Medical Director*
United States Public Health Service

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FOREWORD

In the marine hospitals the Public Health Service was cradled. From them have come inspiration and strength. To the marine hospitals our officers return at intervals from alien duties to relight the torch and renew the ancient pledge. It is timely that this manual should appear with the renaissance of hospital construction. "A few years ago hospitals were but boarding houses for the sick" (Foss). The marine hospitals have been improved not more than other hospitals, which are to-day bright and cheerful places, eagerly sought by all classes in serious illness, scientifically efficient and humanely administered.

19 Jan 1931 Mauch

An important factor in the public health, a hospital is also the best place for the young physican to receive his practical training and for the older physician to refresh his knowledge. For the detection and prevention of disease and for real progress in methods of diagnosis and treatment, the opportunity offered by the hospital is unique; and for usefulness there is no other institution that functions 24 hours in every calendar day with each minute of time so crowded with service to mankind. It must serve. In national disaster of any kind it may not falter. In flood, hurricane, or fire, its resources and reserve must permit uninterrupted service. Like parental love or patriotism, it can not fail.

To the American merchant seaman, our first obligation and our peculiar charge in this revival of national shipmindedness, we are bound by sentiment and tradition. The merchant marine consists of ships and men. Promptly to restore seamen to health and duty is as important as to speed their ships through quarantine. We aim to shorten the period of hospital treatment by improving our efficiency. This manual is well calculated to stimulate thought and effort. It is necessary because of the rotating functions of Public Health Service officers and their temporary tours in the marine hospitals. It will enhance the knowledge and insure the sympathy of hospital personnel and promote the flexibility necessary to prevent a hospital from becoming a machinelike organization without proper variations for individual needs. I commend it to the study of all officers of the Public Health Service.

H. S. Cumming,
Surgeon General

PREFACE

The chief executive of a hospital is confronted daily with various problems which require solution. The difficulties which present themselves will range from the providing of proper professional care for the patients down to the prevention of unnecessary breaking of the table china. It is not only unwise but absolutely impracticable to attempt to standardize the method of management in all institutions, but the knowledge of the various procedures which have been successfully applied under like conditions at other stations will always be more or less helpful to the pioneer who is trying to blaze his own trail.

This Manual of Hospital Management has been written in the hope that it may prove an aid to fellow officers and employees in the Public Health Service who are endeavoring to conduct their institutions so as to give the utmost service to the patients.

The chapters have been grouped not entirely in logical order, but somewhat in the manner in which hospital work usually unfolds itself to those who investigate its problems. An effort has been made to place formulæ, recipes, sample menus, highly technical descriptions, and the like in the appendix, so as to keep the text as readable as possible. It is also hoped to be able to supply additional technical material for the appendix from time to time, as better methods or practices are developed.

The author desires to express his appreciation and thanks to those officers who so generously contributed the material found in Chapter VIII and to many others who from time to time have made helpful suggestions.

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CHAPTER I

GENERAL DESCRIPTION OF THE HOSPITALS AND BENEFICIARIES

Marine Hospitals

Historical.—The United States Government has furnished medical and surgical care to sick and disabled seamen of the American merchant marine since the year 1798, in which year the United States Marine Hospital Service was organized to provide this treatment. The patients are cared for either in hospitals belonging to the Government or in civilian institutions under contract.

The expense was first met by assessing a tax of 20 cents per month, and later 40 cents, on the wages of all sailors employed on American merchant vessels. The money was collected by the collectors of the customs, who had much to do with American vessels in general, and for this reason the Public Health Service was placed under the jurisdiction of the Treasury Department, where it has since remained. Later the cost of furnishing this service was borne by a tonnage tax imposed on American and foreign vessels; but since 1906 the Public Health Service has been supported by specific appropriations made by Congress, and since 1884 seamen have not contributed directly toward the maintenance of any of the marine hospitals or contract stations.

The first marine hospital was built in 1800 at Norfolk, Va.; another marine hospital was constructed at Boston in 1802, and from that time on additional marine hospitals have been erected at other large seaports and on the Great Lakes and navigable rivers as necessity demanded.

The United States Marine Hospital Service, in the course of time, came to be intrusted by Congress with various public-health functions of importance to the Nation, so that in later years the original name was deemed inadequate to represent the true scope of its activities, and eventually an act was passed changing its name to the United States Public Health Service. The medical care of American seamen, however, is still one of the important duties of the more recently created United States Public Health Service.

Number and Type.—The Public Health Service conducts 25 marine hospitals at the present time, of which 21 are of the general type, 1 is devoted to the treatment of pulmonary tuberculosis, 1 to the care of persons afflicted with leprosy, [1] and 1 (Ellis Island, N. Y.) chiefly to immigrants of both sexes and all ages.

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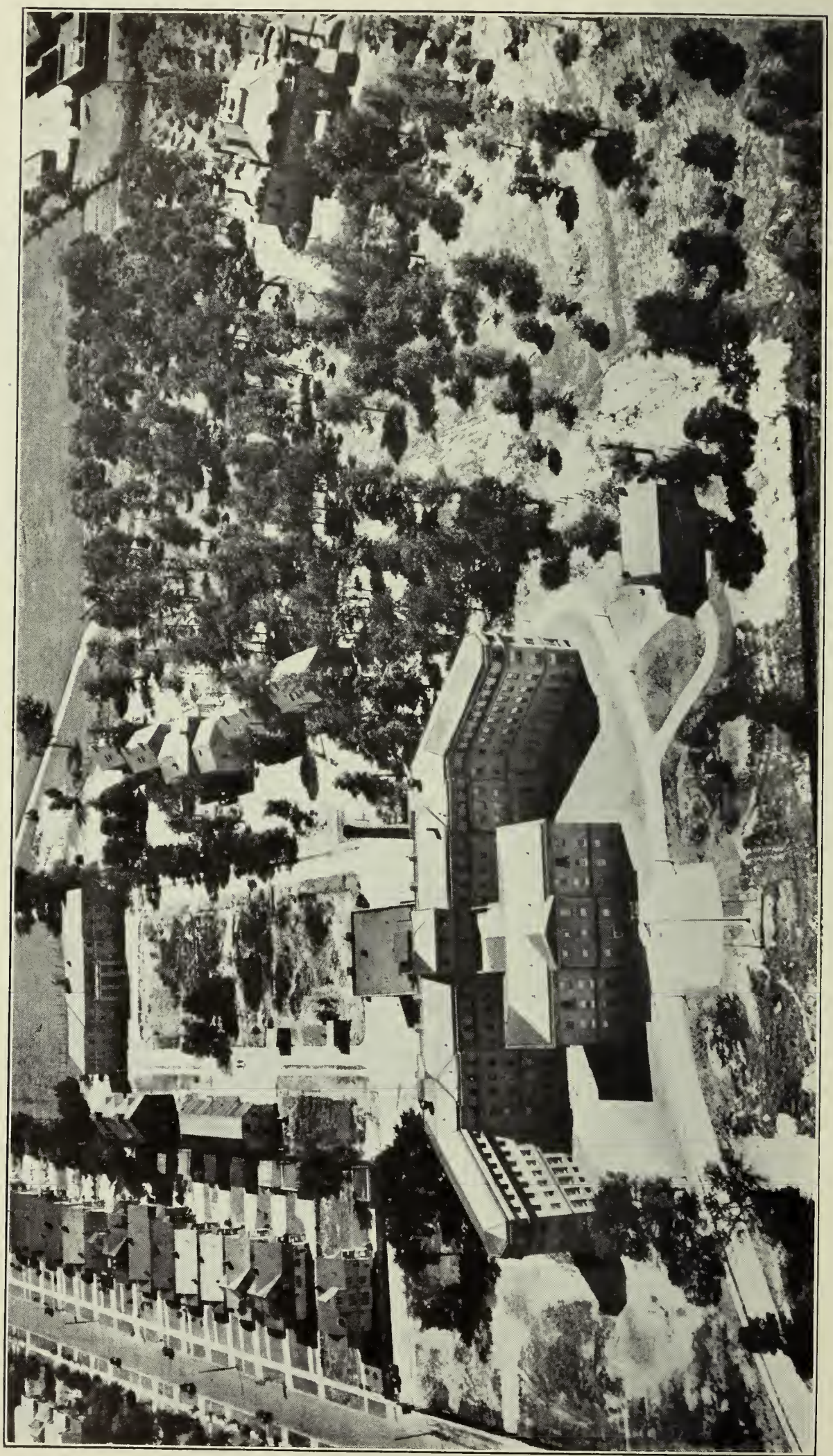
[1] The leper patients come from the general population and seldom from the personnel of American merchant ships.



United States Marine Hospital, Cleveland, Ohio

Location and Bed Capacity.—The locations of the marine hospitals were originally selected best to meet the requirements of the merchant marine. The size of the hospitals varies with the importance of the port in which they are located. The largest is in New York City, while the smallest is at Vineyard Haven, Mass.

Beneficiaries

American Seamen.—The largest group of persons admitted to the marine hospitals comes from American merchant vessels; these constitute about 64 per cent of patients hospitalized. It is estimated that there are approximately 200,000 persons in this country who are employed on vessels of American registry, which would constitute the total number of eligibles in this class. About 100,000 such persons apply yearly at marine hospitals or out-patient offices for treatment.

United States Coast Guard.—Officers and members of the Coast Guard, numbering approximately 12,000, follow American seamen in numerical importance as regards beneficiaries of the Public Health Service, constituting about 12½ per cent of the patients.

United States Employees' Compensation Commission.—Employees of the Federal Government injured while on official duty are entitled to the benefits of the service and stand third in the number of cases.

United States Veterans' Bureau.—A number of veterans are taken into marine hospitals on request of the Veterans' Bureau and form an important group of admissions.

Immigrants.—At the Ellis Island hospital approximately 5,000 immigrants are hospitalized yearly and must be examined and cared for. Most of them are unable to speak the English language.

Lepers.—The Public Health Service maintains a national leprosarium in Carville, La., and any leper residing in the United States may go there. This institution was caring for approximately 300 patients on January 1, 1930.

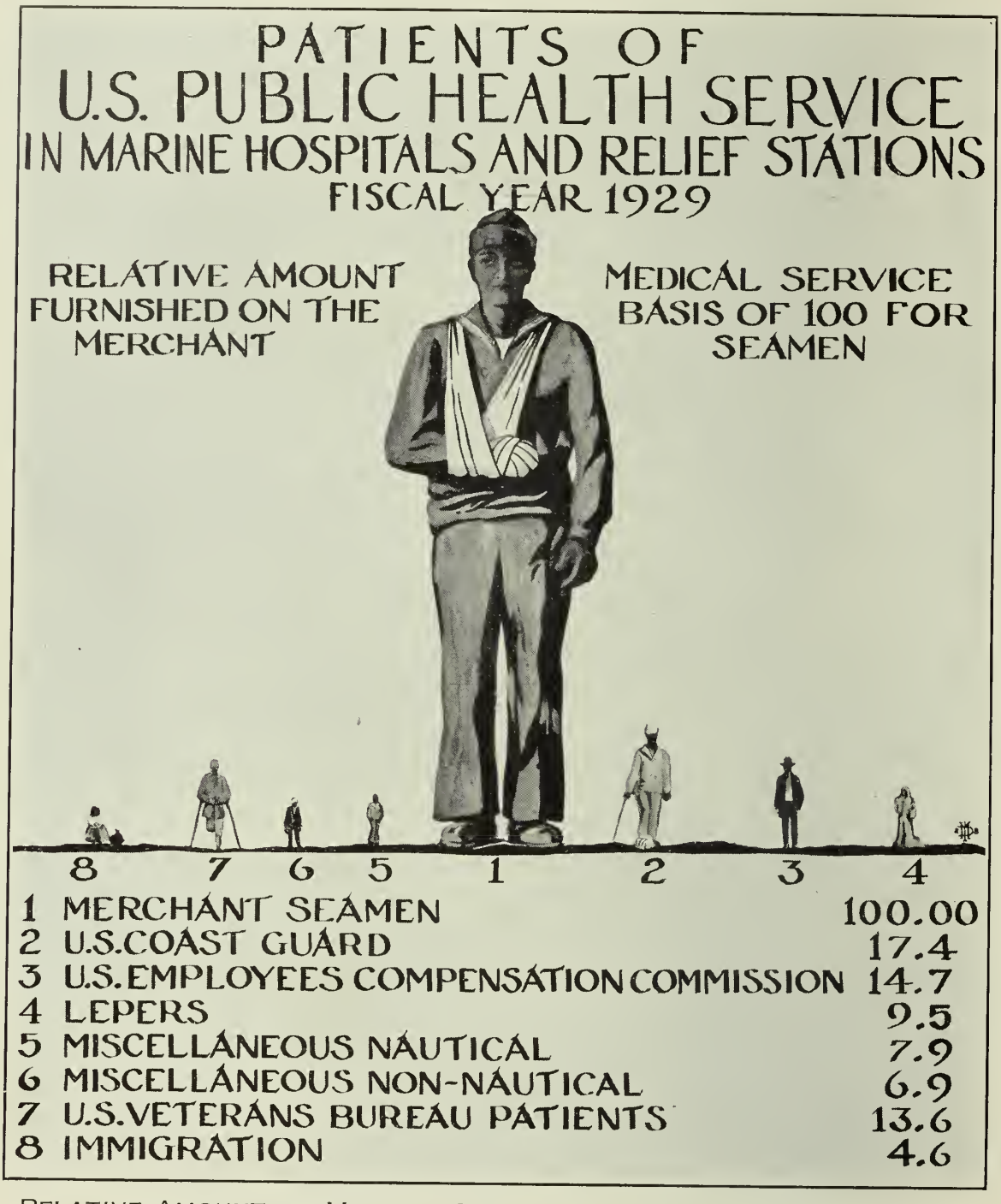
Other Eligibles.—Employees of the following-named Government services, under certain conditions, may enter marine hospitals for treatment:

United States Coast and Geodetic Survey.
United States Lighthouse Service.
United States Bureau of Fisheries.
United States Public Health Service.
Civilian seamen from vessels of the United States Army.
Seamen of the Mississippi River Commission.

Officers and enlisted men of the Military and Naval Establishments, on official request of their responsible officers, are given treatment where there is a Public Health Service relief station.

Foreign seamen are admitted as pay patients upon proper assurance of the ship's master or the consul that the hospitalization charges will be paid.

Nature of Professional Work.—At the present time seafaring men suffer from about the same diseases as do persons in the general


PATIENTS OF
U.S. PUBLIC HEALTH SERVICE
IN MARINE HOSPITALS AND RELIEF STATIONS
FISCAL YEAR 1929
RELATIVE AMOUNT FURNISHED ON THE MERCHANT
MEDICAL SERVICE BASIS OF 100 FOR SEAMEN
8 7 6 5 1 2 3 4
1 MERCHANT SEAMEN 100.00
2 U.S.COAST GUARD 17.4
3 U.S.EMPLOYEES COMPENSATION COMMISSION 14.7
4 LEPERS 9.5
5 MISCELLANEOUS NAUTICAL 7.9
6 MISCELLANEOUS NON-NAUTICAL 6.9
7 U.S.VETERANS BUREAU PATIENTS 13.6
8 IMMIGRATION 4.6

RELATIVE AMOUNT OF MEDICAL SERVICE FURNISHED BENEFICIARIES OF THE UNITED STATES PUBLIC HEALTH SERVICE

population. In the days of the sailing vessels, conditions were somewhat different. The voyages were long, the food was poor, and the forecastles were often insanitary. Wearied by the monotony and hardships of such an existence, many sailors were intemperate in their indulgences when ashore and became the easy prey of the human harpies who infested the water fronts. Venereal diseases were rife among the single men and adequate treatment was rarely

taken for sufficient length of time. As a result, the marine hospitals received a number of unfortunates with locomotor ataxia, aortitis, aneurysm, or cardiac failure, now known to be the aftermath or sequelae of syphilis. Steam power and humane legislation for American seamen have changed this picture decidedly. The trips are shorter, the meals are good, and the quarters for the crew are more comfortable, so that now it may be safely said that there is no special health hazard incident to employment on American vessels.

Sailors visit all of the ports of the world and at times return to this country with tropical diseases or other exotic ailments. Hence, officers of the Public Health Service must be familiar with such diseases. The professional work in marine hospitals is otherwise similar to that in civilian institutions.

However, there is one very decided difference: A landsman ill or injured remains in hospital only until he is able to go home, and the period of convalescence is usually spent with his family. The sailor rarely has a home in the port where he is sick; hence while he is convalescing he must remain in the hospital, for he can not do much for himself in the way of medical treatment while he is in a sailors' boarding house. These convalescent patients, often active and with healthy appetites, present problems of administration not ordinarily encountered in civilian hospitals.

There is a constant effort on the part of all Public Health Service institutions to return their beneficiaries to duty at the earliest possible moment; but many difficulties arise, especially in the case of the homeless patients and those without funds. Similar conditions prevail to a certain extent in military establishments and in municipal hospitals.

It is not difficult to arrange for the welfare of men acutely ill who are confined to bed; but when the patient is up and about, and remaining in hospital for a prolonged period, his demands on the institution will be of a different type. He is likely to become tired of the food and to complain. The necessary restrictions of hospital life become irksome, and breaches of discipline occur. Therefore, smoking rooms, reading rooms, books, games, occasional social entertainments, and diversions are essential for this type of beneficiary.

The Public Health Service makes a large number of physical examinations for the Coast Guard, the United States Employees' Compensation Commission, the Civil Service Commission, the Immigration Service, the Bureau of Pensions, and the merchant marine, which throws quite an additional burden on the hospitals or their out-patient offices. In making the examinations for the Immigration Service, considerable specialized knowledge concerning diseases like trachoma, favus, feeble-mindedness, insanity, and disorders of the nervous system is required, not ordinarily possessed by physicians in private practice.

CHAPTER II

ORGANIZATION AND HOSPITAL ADMINISTRATION

Under this heading will be discussed the usual duties of the various officers and employees assigned to the hospitals of the service, and also the work of the divisions into which the hospital functions have been divided by the regulations.

DUTIES OF MEDICAL OFFICER IN CHARGE

Marine hospitals are always commanded by a medical officer of the Public Health Service, who acts as the general superintendent and, with the bureau authority, assumes the functions of the board of directors, trustees, or similar bodies in administrative control of civilian institutions. The purely professional work is performed chiefly by junior medical and dental officers. It was once practicable for an officer in charge to give personal attention to many minor details that now must be intrusted to subordinates. This change has come about gradually, owing to the increase in the size of the institutions and the development of the modern hospital. To-day the medical officer in charge is able in the large hospitals to devote the major part of his time to general administrative work.

However, under any plan of organization the officer in charge must act as a connecting link between the different divisions of the hospital, bringing them into harmonious cooperation. There is no detail too small to deserve his attention. Insignificant things are those most often overlooked, but which when neglected may lead to serious consequences.

It will not be practicable to discuss here all the duties of the medical officer in charge, but merely to refer in a general way to some of the most important ones.

Professional Care of Patients.—The officer in charge is responsible for the professional care which the patients receive, and he should exercise sufficient supervision over the medical and surgical work to know personally that the patients are being carefully examined, the diagnoses checked, the case histories properly recorded, that the treatment is modern and up-to-date, and that satisfactory results are being obtained. This is easily said, but to put it into practical execution is by no means a simple matter.

The best results can probably be obtained by assigning medical officers to the different wards and holding each one responsible for the quality of the medical work assigned. Too much interference on the part of the medical officer in charge in regard to the treatment will never produce effective results. Anything to be corrected should be brought up at first in the manner of a suggestion, and the junior medical officers should be made to feel that the medical care of the patients is their own personal responsibility, the officer in charge standing more or less in the status of a consultant who is to be notified whenever anything interesting, unusual, or serious occurs.

If the officer in charge has kept up his surgery, it is good practice for him frequently to act as an assistant to the younger members of the staff and permit them to do the greater part of the actual work under his direct supervision. This will greatly increase their interest in the patient and his aftertreatment. Whether he actually operates or not, the medical officer in charge should see to it that proper standards of asepsis are observed in the operating rooms, in the preparation of the patients, in the sterilization of instruments and dressings, and in "scrubbing-up" procedures. A standard technique should be adopted for all these details and the procedure should be frequently observed to see that the instructions are being carried out.

It is always well fully to realize that no matter how carefully a plan of organization and procedure is drawn up and started, constant supervision is required, or sooner or later it will be found that the method has been completely changed. This applies not only to the keeping of records and books, the giving and recording of orders, the preoperative treatment of the patient, etc., but to practically every form of procedure in common use in hospitals. It is very easy to write orders, but the *real test of the efficiency of an officer is how successful he is in getting his orders continuously carried out.*

It may be pertinent to remark that no matter how hard a superintendent works disconcerting things will happen in every hospital. These may range from the discovery that a patient has been in the wards and treated for several days without a record of his admission up to the death of a delirious man from some accident that efficient oversight might have prevented. Disasters of this sort have happened and apparently will continue to happen as long as institutional employees are human and human beings continue to make mistakes. It may be some consolation to know that nearly every hospital has these experiences. As they frequently lead to unpleasant criticism by the press, the need of constant watchfulness is evident.

Assignment of Duties to Personnel.—The regulations are properly somewhat elastic in regard to the various duties of the personnel under the medical officer, and one of his most important functions is to assign these duties. The regulations give the general drift and cover

the most important points, but the officer in charge is at liberty to make certain minor modifications if desirable, which may enable an employee to perform the work for which he is best fitted and promote smooth administration.

The junior medical officers are assigned to the various wards, and it is always wise to call them in for preliminary instruction. They should be questioned freely as to their previous experience, their tastes along medical lines, and what sort of work they believe they are best fitted to perform. This knowledge will often be a help in selecting a detail which is agreeable to a man rather than one which he dislikes. At times it is wise to rotate the officers, especially if some of the duties are considered more disagreeable than others, in order to treat all with equal fairness. Such rotation also enables the medical officer to make a change which may be desirable because a man is poorly adapted to the work that he is doing, without causing unfavorable comment in hospital circles, which are only too prone to interpret changes of assignment as evidence of unsatisfactory service. Every attempt should be made to promote good feeling and to insure the interest of the medical officers in their duties.

Frequently an employee will be found who gets along very well in the particular niche which he is filling, except for some one thing which is the occasion of a certain amount of friction from time to time in the institution. It is oftentimes practicable to relieve him of this particular task and assign it to some other employee. Such a change will often result in harmony where otherwise there would be discord. The medical officer in charge should always remember that all employees will have certain defects and that perfection can not be expected; but tact and judgment are useful in making the pegs fit. No attempt should be made to have an unsatisfactory employee transferred to another station.

Coordination of the Various Divisions.—The different activities of the hospital naturally fall into various divisions, such as nursing, dietetic, laundry, clerical offices, motor transportation, janitor, etc. While the functions of these departments are fairly clearly defined, nevertheless there is bound to be a certain overlapping of fields of endeavor and at times conflicts of authority. For example, a schedule must be prepared whereby the soiled linen is sent from the various parts of the hospital to the laundry in such a manner that the load is constant and the laundry can function to its greatest advantage. This can be done only by some one who knows the needs of the wards in regard to the linen question and the capacity of the laundry. The diet kitchen may be wasting the time of orderlies, who wait around the kitchen for trays. Unnecessary motor trips occur because the calls are not being assembled by one responsible individual. The medical officer in charge devotes, therefore, a great deal of his

time to securing smooth cooperation between the different departments by arbitrating such differences of opinions as are constantly arising.

The natural trend of most hospital division heads seems to be to demand an increased number of employees. It is only natural that with the growth of the institution and the developing of better technique, the work of the various divisions increases, and the first inclination of the chief of the section is to ask for more help rather than to endeavor to reassign the tasks so that the present force will suffice. Any additions or alterations to the buildings or grounds or changes in plan of organization are always apparently a very good excuse for requests for establishing new positions. Some of these demands are entirely legitimate, but many of them are not, and all applications for increased personnel must be very carefully checked and considered.

Some one has said that there is a constant tendency for institutional employees to "ease up" in their efforts, so that ultimately two men are required to do the work which should be done by one. While this may be an exaggeration, nevertheless it must be admitted that continual effort is necessary on the part of the head of the institution to insure that the personnel are giving full return for the wage paid.

The psychology of this is not difficult to explain. While in business organizations the test of profit and loss is easily applied and must be the dominant factor in deciding the number of employees and the wages paid, no such check is available in most institutions, and the path of least resistance, when difficulties present themselves, is to ask for additional help rather than to spend the time and energy necessary to work out a plan whereby the situation can be handled with the force available.

Maintenance of Discipline.—The respective heads of the various departments of the hospital are usually intrusted with the immediate details of handling their own personnel. The chief dietitian, for example, having charge of the cooks, kitchen help, waiters, etc., is expected to see that these individuals properly perform their duties, and to endeavor by admonition and warning to correct such faults and delinquencies as may arise. It is far better to let the head of a department have a rather free hand in such matters than to attempt to interfere; but as the officer in charge must accept full responsibility for the official act of any of his subordinates, he must exercise a certain supervision over the disciplinary problems of the station, keeping sufficiently in contact with the situation to be assured that everything is functioning correctly.

Upon the medical officer in charge will naturally fall the duty of imposing such disciplinary measures as may be required, in the case of the higher employees or heads of divisions, and he will also be fre-

quently consulted by the heads concerning their own individual problems and by disgruntled employees who come to him as a last resort. It is essential, then, that he be familiar with the rules and regulations concerning the employment of civil service personnel, and also those provisions which cover suspensions, dismissals, and the like.

Selection of Employees.—It is the part of wisdom in most instances to permit the heads of departments to select their own employees, or at least to give them a pretty free rein in this respect, subject, of course, to the final approval of the medical officer in charge.

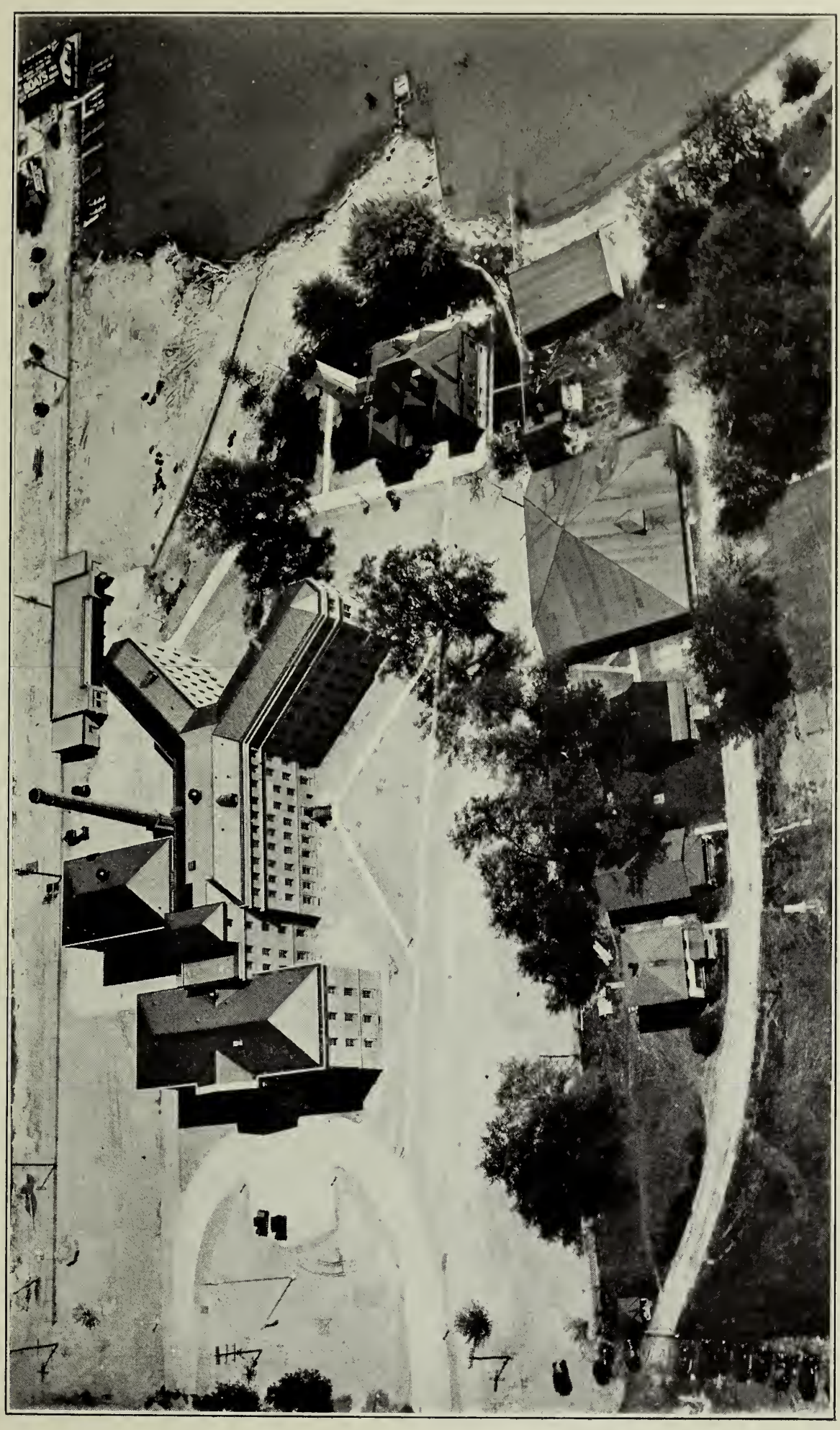
When this plan is followed the employee is more likely to entertain a sense of loyalty toward the person who directly employs him, and the heads of the departments will naturally feel very much better satisfied with personnel they are allowed to choose for themselves. Furthermore, the turnover of certain employees—that is of orderlies and waiters—in a large institution is so great that it will be absolutely impossible for the medical officer in charge to interview and make personal selection of all applicants. The chief nurse is usually allowed to select the orderlies; the dietitian to select the cooks, waiters, and kitchen help; and the matériel officer to choose the various employees in the departments assigned to his jurisdiction.

The medical officer in charge should have it understood that he is to be consulted before final action is taken in the selection of chief engineers, chief cooks, head chauffeurs, stenographers, clerks, and some of the other more important positions.

Civil-service procedures.—Before filling any vacancies it is necessary to ascertain whether the position is under civil service. In such cases a request for a list of eligibles must be made to the secretary of the Civil Service Commission in the district in which the hospital is located. The selecting officer is permitted to make his choice from any of the first three names on the list.

Where feasible, letters are usually sent out to all the persons named in the list, asking them to appear at the station for an interview. In this letter the salary, allowances, nature of the work, and all other details should be fully explained so that time will not be wasted in interviewing candidates who might not want the position after they had been selected.

The examination papers generally accompany the certificate, and the information concerning the applicants usually found therein will be helpful to the appointing officer in making an intelligent selection. Should all the certified eligibles be apparently unsuited for the position, on account of age, lack of experience, training, or for other reasons, the appointing officer should inform the secretary of the commission of the facts and request a new list, stating his especial



United States Marine Hospital, Detroit, Mich.

requirements. Eligibles can not be rejected for trivial reasons, however.

A uniform plan should be utilized by the person interviewing prospective employees, especially those in the lower grade and not covered by the civil-service examination.

(1) The appearance and dress of the individual should be carefully noted. Most people think that they are able to read character by the face, but unfortunately there seems to be no sound foundation for any such belief. Probably we mistrust certain people on first meeting them, because they resemble in appearance other individuals whom we have known and found to be unreliable, and vice versa a certain type of individual impresses us favorably on account of a real or fancied resemblance to others who have proved to be of good character in the past. While character reading is not practical from the facial expression, nevertheless something may be learned in a short interview by carefully observing the dress, manners, and conversion of the applicant for employment.

A person who is so indifferent to appearance as to present himself with unclean linen and dirty clothing when looking for a position is not the type desired. It may be quite obvious from a very casual inspection that the applicant has not the physical strength required to fill the position successfully, although appearances in this respect are often deceiving, and the physical examination made by a medical officer of the station will be very helpful in checking on this point. The scrutiny of a man's hands, if he claims to have been pursuing any of the occupations requiring considerable manual labor, will often reveal something regarding the diligence with which he has applied himself.

The candidate should be encouraged to talk as much as possible, and especially to give a full history of his various positions in the past. Gradually, he should be led on to explain at length why he left his previous employer, and very often valuable information concerning his character may be deduced from his statements on this subject, as it will probably be the case, if the man has nothing but hard words for the last place at which he was working, that he was very incompetent or was discharged for some other valid reason.

(2) Recommendations should always be required, but too much confidence should not be placed in written references. Usually it is best to call up the last employer on the telephone and get his oral statement as to the character and ability of the applicant. Frequently men who have given an employee a commendatory letter will discount the same very markedly in a personal interview, if they are approached in the proper manner. The recommendations when written should come from a *recent* employer, as otherwise it may be

found that the station is carrying as a member of its personnel some highly undesirable character with a previous police record.

Oftentimes employees at the station will bring their friends and urge that they be given employment. This is a very good method of filling vacancies on occasions, but the intelligence and character of the person making the recommendation must be carefully considered, and it is not usually advisable to permit one man to fill too many positions in this way, for a clique might be formed which may make discipline more difficult. The same objection may apply to employing two or more members of the same family, as this frequently leads to various complications, especially requests to take leave at the same time, and the bringing of family difficulties into the official work.

The conditions of employment—that is, the nature of the work required, hours of duty, time off, annual leave, and other details of the position—should be carefully explained to the candidate before he is engaged; also he should be informed of requirements in regard to typhoid and smallpox vaccinations.

It is extremely important that the candidate be informed regarding the *method of payment*, as considerable embarrassment is often caused executives because of having to discharge an employee for incompetency without being able to pay him. This has occurred so frequently that it seems advisable to have the employee sign a form, such as that given here, to the effect that he knows the conditions of payment and agrees to them.

UNITED STATES MARINE HOSPITAL,
Chicago, Ill.

I hereby acknowledge that it has been fully explained to me that in the event my services are discontinued through any cause whatsoever, I will immediately have to leave the premises of the United States marine hospital, Chicago, Ill.

I further understand that the pay rolls are completed on the 15th and last day of each month, and that they are then forwarded to the bureau of the United States Public Health Service, Washington, D. C., and checks are received approximately eight days or more thereafter.

I am freely entering the employment under the above conditions.

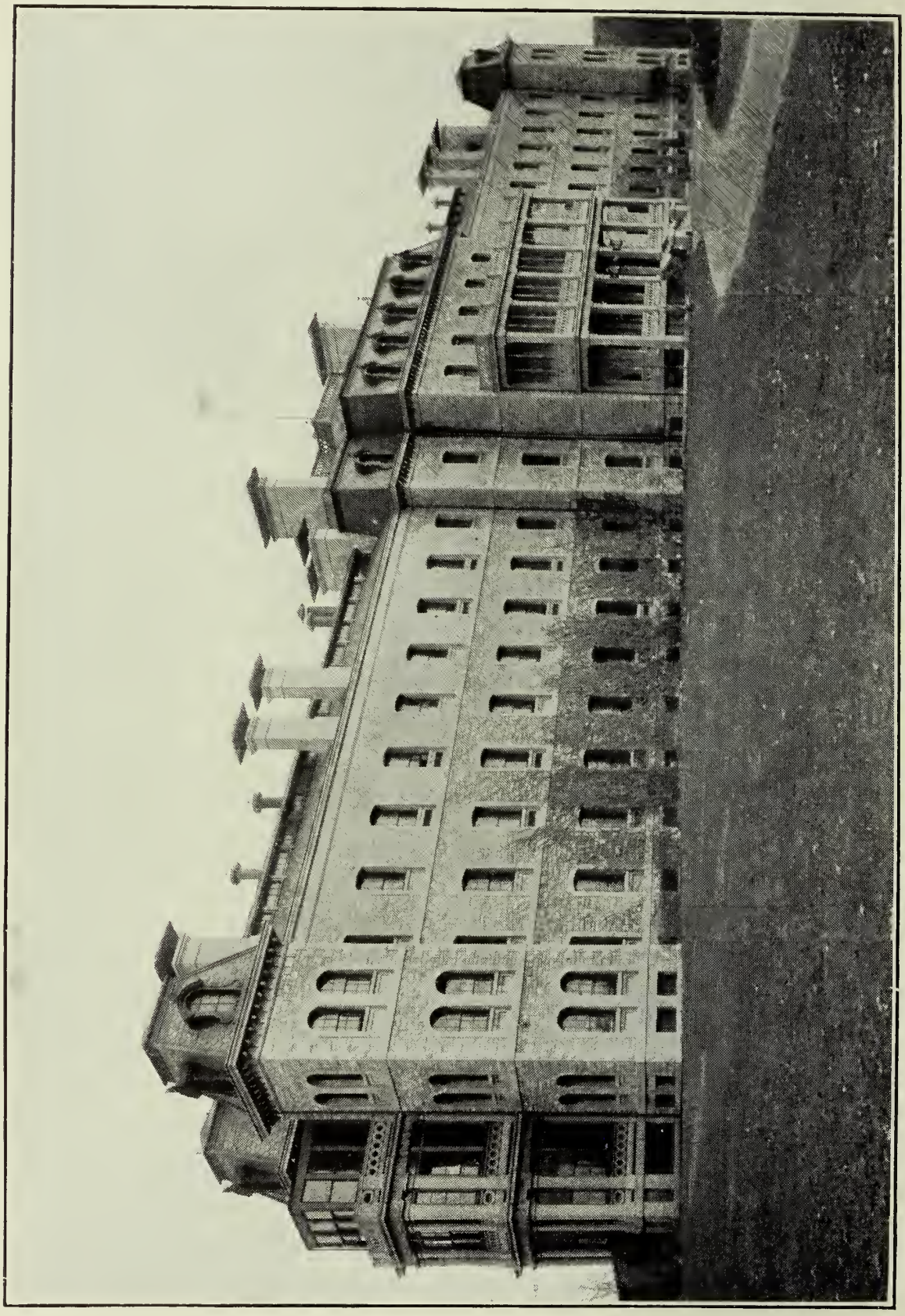
_____
(Signature of employee)

_____
(Date of signature)

N. B.—Each employee should, upon completion of his services, leave his forwarding address at the administrative office, so that his check may be promptly mailed to him.

Dismissals.—The old aphorism "Be slow to hire and quick to fire" applies in Government service, especially as far as the hiring is concerned, but in regard to the discharging one must be very careful. Even if an employee does not have a civil-service status he should not be discontinued except for due and just cause, which cause can be fully explained in writing and made a part of the permanent records of the station.

Employees are sometimes found who are markedly inefficient in general but who commit no particular overt act which justifies their separation from the service. It is the constant repetition of minor



United States Marine Hospital, Chicago, Ill.

delinquencies which makes the person in question unsatisfactory. In instances of this sort a written memorandum should be kept of these offenses so that when the record shows sufficient evidence of decided inadaptability the employee can be dropped; and if the matter

is ever questioned by his friends, evidence is available to justify his discontinuance.

When an employee is dismissed for unsatisfactory service it is never wise to allege some other grounds, such as abolishing the position or a readjustment of the force, as one may find after all these changes have been made that it is necessary to reemploy the individual in question, because there is nothing on the record against him; hence it is much wiser and better to state the real reasons from the start and drop the employee for inadaptability or inefficiency, as the case may be.

Very often unsatisfactory employees can be induced to resign by a frank and friendly talk, pointing out to them that their qualifications do not fit them for the particular work which they are endeavoring to perform, and that they would probably be more successful and happy in some other position. By using a certain amount of tact and consideration the station may get rid of a person who is not satisfactorily performing his duties without gaining his ill will and with a minimum amount of clerical work and annoyance to all concerned. When more drastic measures are necessary the medical officer in charge should be extremely careful to proceed in the proper manner and comply with the regulations of the Public Health Service and also of the Civil Service Commission, as it is very embarrassing to have summarily discharged a man and then to receive an order from the Civil Service Commission that he is to be restored to duty.

When an employee is guilty of an offense that warrants his separation from the service it is sometimes best to offer him a chance to resign; but if he refuses to do this, then it will be necessary to draw up charges against him.

Drawing up Charges.—The allegations of misconduct must specifically state exactly what the offense was and, if practicable, the time and date when it was committed. The general classification, as named in the Public Health Service Regulations, under which the act comes, should also be given, that is, whether the misconduct was disrespectful, insubordinate, neglect of duty, immoral, dishonest, or financially irregular, felonious, unbecoming the service, bringing the service into public disrepute, etc.

In preferring charges the officer in charge should remember that he is an impartial judge in the matter. His attitude toward the employee should not be one of anger or irritation but rather of calm, judicial inquiry. Charges should not be brought unless they are well sustained by competent evidence.

When accusations against a member of the force are made, before proceeding to take any official action the accuser should in every case be required to put the charges in writing and be particularly advised that any charge which he makes and can not sustain may result in

more or less serious consequence to the complainer. The written specifications, if presented, should be reviewed before being acted upon; and if they are not properly supported, the complainant should be advised not to attempt to pursue the matter.

Very often the time required to draw up the formal documents will afford an opportunity for the supposedly injured individual to cool off, and the whole thing may be dropped, to the great advantage of the station. In any event the complaint must be known specifically before any sort of formal investigation is started.

Suspension from Duty.—The question will frequently arise as to whether or not the individual should be suspended from the time the charges are preferred until some definite action has been taken in the case by the bureau, the Civil Service Commission, or others in authority. The correct course will depend largely on circumstances.

If the conduct has been scandalous and is well known throughout the entire institution, the immediate removal of the individual from contact with the patients and other personnel may be desirable and essential. If the charges are of a more or less minor nature, or are not publicly known, it is usually better not to suspend the employee.

If the employee is permitted to resign to avoid charges being preferred, a full record of the incident should be kept in the station files, so that later on if he applies for recommendations or reemployment, the facts will be available for reference.

Group Interviews.—At times all the nurses, orderlies, or some other group of employees will request a hearing with the officer in charge. Under such circumstances it is the part of wisdom to restrict the interview to *one* or at most *two* members of the section who shall be delegated by the remainder to represent them in the conference. One can not very well talk to a dozen or more disturbed persons at once, and such a meeting is likely to get out of the control of the presiding officer, especially if there is some feeling of irritation on the part of the complainants at the time over some fancied wrong.

In any sort of emergency, when two or more persons are in conflict and making accusations against each other, it is well to consult with them separately in an atmosphere sufficiently quiet to enable one to come to a judicial decision. Later the accusing parties may be brought face to face when the matter has been gotten somewhat better in hand and the preliminary excitement has subsided. Time is said to heal all wounds, and very often by postponing the actual settling of an affair of this sort the matter will work itself out so that the decision becomes rather easy. In any event, where the officer in charge is in doubt as to the best course to pursue, he may with great propriety state that he desires to take the matter under consideration and thus obtain an opportunity to look up the regulations or even to consult with others concerning the best course to adopt.

He should in all instances avoid being forced into making too hasty a decision on account of the insistence of any of the personnel for the same.

Increases in Compensation.—The medical officer in charge will frequently be approached by various employees or their immediate superiors with requests for increases in compensation. Usually very good reasons are given why the additional salary is merited, and it is difficult to resist such appeals. Some plan must be adopted to secure a uniform and just action on these applications, and the following is suggested:

The same principles should apply in determining Government salaries as in any other business, except that the hospitals are not maintained for purposes of profit. It would seem to be eminently proper that the Public Health Service should pay its workers what outside agencies are giving for equal time and effort, with such minor adjustments as the security of office, hours of duty, extra leave, and other conditions may warrant.

The medical officer in charge, then, should keep himself thoroughly posted on the hours of duty and wages paid by business establishments for services similar to those rendered in the hospital and be governed accordingly. The institution can not be expected to pay more; and if it wants to secure competent help, it should not pay less than the prevailing wage scale in the locality in which it is operating.

In years past, civilian hospitals were seriously handicapped because of the scarcity of funds and low wages, which resulted in their securing employees of a very inferior sort. In fact, for the humbler positions, they were often compelled to take on human wrecks who drifted from place to place, putting in short periods of employment, interspaced with much longer periods of intoxication or idleness. Frequently old and decrepit men who could no longer secure a living wage in industry, were found pottering around hospitals because no one else could be secured at the recompense offered. Fortunately much better conditions now prevail, and hospital employees are receiving salaries commensurate with the intelligence and efficiency demanded. There are still positions in most institutions which should certainly be better paid and which would secure higher-grade personnel and more efficient and economical management if such increases in compensation were inaugurated.

An employee will often request an increase because he has served for a certain number of years, and this is one of the arguments most frequently advanced. It must be admitted that the pay should correspond with the value of the services rendered, and it is difficult to see how a telephone operator, for instance, is of any more value to the institution after five years of service than at the completion

of the first year, provided, of course, the same type of duties are being performed.

If regular advances are to be made to all employees merely on account of length of services, the pay roll in time will become very high, and such a course can scarcely be justified by any business organization. The personnel should be encouraged to seek promotion by qualifying themselves for higher positions rather than to expect more pay because they have been on duty for a long period of time.

Financial Oversight.—All of the hospitals receive a quarterly allotment for their ordinary expenses, and the medical officer in charge must see that the costs of the institution are kept within these figures. It is, therefore, necessary for him to keep constantly in touch with the current expenditures so that it can be definitely determined how the accounts stand.

It is usually best to have the chief clerk divide the allotment into those sums which will probably be required for the different months in the quarter, as the monthly expenses vary on account of the varying amounts of heat, light, and other things required, and the number of patients which may present themselves, there being a marked increase in the demand for beds in the winter as contrasted with the summer season.

As the salaries are practically constant, the amount of the monthly salaries should be first set aside; then the fixed charges, such as rentals; and then the estimated amounts for the other regular monthly bills for fuel, light, telephone service, and water. Subsistence may be figured by determining the probable number of rations required and multiplying it by the estimated cost of the ration. Provision should be made for the usual number of burials, and consultants' fees, if any consultants are on a fee basis. Having set down these charges against the month, it can be determined what balance is left for incidental expenses or unexpected emergencies. All expenditures should be checked up daily so that the medical officer in charge may know what the expenses are and be guided accordingly. Repairs to the mechanical equipment, such as the heating plant, plumbing, elevator, and ice machine, will be made by the Supervising Architect out of his funds under the control of that office, and should not be charged against the station allotment.

As the stations are on a fixed allotment, every proper economy which may be accomplished will result in the saving of money which may be used for some useful purpose, such as the buying of additional equipment. Many persons in the Government employ do not realize this fact and make little attempt to husband the supplies available on account of their ignorance of the direct advantages of so doing. It is wise to have a meeting of the various employees from time to time and to invite their attention to the necessity of saving in light, coal,

water, and the like, which will leave more money available for use in improving the conditions of the institution in all respects, and which will even be reflected in a better ration, more desirable surroundings, and sometimes *pay increases*.

It may be further explained that all appropriations are fixed and not elastic, and that there is not available an unlimited supply to be divided among the different institutions, but that certain additional comforts and conveniences can be secured only by practicing economy here and there. The most important savings are to be made in food, fuel, light, and various other supplies, especially gauze, janitor supplies, and the conservation of hospital property, particularly bed linen, towels, and the like, although no detail is too trivial to be overlooked in a large institution.

Income.—The chief income in marine hospitals is derived from repayment from other services, such as the Army, Navy, and Veterans' Bureau, for the care and treatment of patients from these sources. At some stations this is a very considerable item, while at others it is not a large amount. The bills are made out locally, but the actual transfer of funds is made in Washington.

Small accounts will be collected monthly for repayment of meals furnished guests of the personnel which may be fed in the various messes and also for the sale of any material, such as fats and greases, for which the station has a monthly contract.

There remains still another source of income, and that is the sale of surplus or useless property which has been passed upon by an inspector and disposed of at public auction.

The money received from these payments does not accrue to the hospital concerned, and some of it is not even added to the sums available for the service at large, but is paid into the miscellaneous receipts of the Treasury Department. Officers should bear this fact in mind, as otherwise they may obtain a false idea of the benefits derived by the service from various transactions of this sort.[1]

Records and Correspondence.—The station's correspondence should be prepared in a manner creditable to the hospital. All letters should be carefully examined to avoid mistakes in spelling, grammer, or expression, and should not be signed until presented in proper form. A badly worded or slovenly executed communication may be taken by its recipient as an indication of the general work of the institution. These statements apply equally to the records which remain in the hospital proper. The case histories must be properly prepared, legibly written, and *checked up* before being filed away. It should be a rule of the executive office that all letters are to be answered on the

[1] Only funds received from the Veterans' Bureau become available for use; all other moneys are deposited in the general receipts of the Government.

day received, unless more time is required to secure special information which may be necessary for a proper reply.

The various weekly and monthly reports should be prepared when due and forwarded immediately to the bureau. It is just as easy to send them on time as it is later if the habit of promptness is once established and their preparation is anticipated. This work has to be performed, and it might as well be done at the proper time as at some other period, as nothing is gained by delay.

As already observed, a hospital will be judged, by those not in direct contact with it, to a great extent by the method in which it handles its correspondence—that is, the promptness with which it answers letters, the correctness of its reports, and the care used in preparing vouchers. These are all matters which come to the attention of the bureau almost daily; and much annoyance not only to the bureau but also to the station itself may be avoided by giving sufficient attention to these details.

Government records of all kinds must be preserved, and frequently they are of great importance to the persons concerned therein; hence their careful preparation and preservation is one of the important duties falling upon Government employees.

The regulations of the Public Health Service require that *all letters* must be *answered.* In carrying out this custom, the officer in charge will sometimes be puzzled to know how to handle certain situations which may arise. The most troublesome problems along this line are requests for the nature of diagnoses which are of a confidential character, on the part of near relatives or friends, or requests for statistical data the compiling of which would throw a great burden on the office force. All hospitals are at present being flooded with questionnaires, some of which require a great deal of labor to complete. Reasonable requests should, of course, be complied with. At other times a part of the information requested may be available and easily furnished. In many instances the writers may be informed that their communication has been received and noted or placed on file for appropriate action. All letters should at least receive some sort of an acknowledgement, as above indicated.

Medical officers in charge will often be asked to express opinions on professional subjects which are as yet debatable. These inquiries may come from very varied sources, and great care should be exercised before making reply thereto, as a letter signed by an officer in his official capacity in a certain sense carries official weight, and he might be taken as representing the service in this matter.

Vouchers.—It is only fair to the merchants selling goods to the Government that all accounts be settled as soon after delivery as is practicable. Therefore, all vouchers should be promptly executed and forwarded to the bureau for payment. If memorandum bills are not

received by the station from dealers who furnish supplies, the dealers should be personally solicited to present the same, so that the monthly accounts may be promptly closed up.

Speed in getting out vouchers.—Watchfulness is necessary where discounts are given for prompt payment, and all accounts having this privilege should be given special consideration so that the institution may obtain the desired saving.

Care of Service Property and Duties as Custodian.—The medical officer in charge is ex officio custodian of the buildings and grounds which comprise the station. The various details of this work are discussed in another chapter.

At some stations the matériel officer signs the property return of the station and at others the medical officer in charge; but in any case the medical officer in charge is, in the last analysis, held responsible for the preservation of all public property on the reservation.

Most people feel very little personal responsibility for the property of others, and this is frequently true in regard to the equipment belonging to the service. It has been found that all Government employees must be especially trained before they acquire the art of instinctively safeguarding the various articles for hospital use intrusted to them. Until they have been thus properly taught, they are very likely to give the subject scant thought and attention.

It will be noted from time to time that property is left in places where it may be easily stolen or damaged by exposure to rain or the like. Misuse of equipment is another fault frequently observed, such as utilizing towels to wipe up the floors or blankets as cover cloths. Tools are often laid down and forgotten and surgical instruments applied to some service for which they were never constructed or intended.

All institutions lose a large number of articles through carelessness or by actual theft, and it is only by eternal vigilance and constant watchfulness and untiring effort that property losses and damages can be kept down to a reasonable degree.

The Public Health Service has adopted a very good system of dividing property responsibility among the various employees of the station, and the actual enforcement of the details of the plan are placed on the shoulders of the matériel officer, but the medical officer in charge should at all times remember that he is equally responsible with the matériel officer. Therefore, in any event, he should devote a considerable part of his time and attention to supervising the general safeguarding of the numerous articles of equipment required for proper hospital administration.

Investigations as to cause of unusual breakage of china, of too great wear and tear on linen while in the laundry, of undue shortages on the wards or other departments will from time to time be necessary, and

the medical officer in charge should frequently make inquiry so as to satisfy himself that the property audits are being made at the proper intervals and the items actually checked by actual count.

Preparing Requisitions.—The supervision of requisitions is important. Requisitions should be prepared in such season as to anticipate the needs of the station and before the supplies are so nearly exhausted that a shortage is bound to occur before the new issues are received.

The determination of what quantities will be required of the various items is one demanding both experience and judgment, and careful study should be given to this part of the work. Station records of previous receipts and issues are helpful in this connection.

The filling of requisitions places considerable clerical work upon all concerned; hence they should not be made at too frequent intervals, especially for similar classes of supplies, and this can be avoided by careful foresight. A list of the articles to be requisitioned should be written up as it is noted that the supplies are diminishing, so that when a requisition is being sent in all necessary items may be included.

The description of the equipment required should be so completely set forth as to indicate to the bureau and purchasing agencies exactly what is desired. The name of the article, size, material of which it is composed, and all other essential details should be incorporated.

For example, a requisition was once forwarded for "three dozen brass padlocks." The station received three dozen padlocks used on dog collars. The wording should have been "three dozen padlocks, brass, 1½ inches; hard cast bronze case; self-locking, metal spring shackle; brass and bronze inside mechanism; pin tumbler protective lock complete with two German silver, heavy, corrugated keys; John Doe & Co., #244 or equivalent." Had this sort of a description been sent, the supply officer would have understood exactly what was wanted, which certainty could not be expected when the requisition read merely "brass padlocks."

The name of the article, with a reference simply to a catalogue number of some firm, is not a good method to use, as all of the persons through whose hands the requisition passes may not have the catalogue available for consultation. Give full description as well as catalogue reference. Articles appearing in the General Schedule of Supplies should be identified by stating complete item numbers. Contracts of the General Supply Committee are utilized wherever practicable by the purchasing office. The supplies and equipment included therein should be requisitioned instead of similar articles appearing in commercial catalogues.

Requisitions are generally used as the basis for drawing up proposals, and it is a saving of time and effort to all concerned to have the description so complete in the requisition that the proposal may be properly prepared by quoting it verbatim.

In making requisitions for certain articles, such as furniture, carpets, hangings, and the like, it is rather difficult to describe the items so accurately that bidders will know exactly the quality desired; but unless this is very carefully done, some contractor will substitute an inferior article which can not be refused because the proposal is so drawn that the inferior grade amply fulfills the qualifications as given. Repeated consultations with the various merchants or agents may be necessary in order to determine in just what manner the better article differs from the inferior substitute which may be offered. The difference may consist in the materials used, including weaves, weights, thickness, and the like; the method of manufacture or assembly; the interior construction and fittings; the exact dimension of the finished product; and any other points which will suggest themselves on careful study.

The perusal of the manufacturer's catalogue will often be of great assistance, as it usually sets forth correctly and fully the points in which the article described is claimed to be superior to its competitor.

To facilitate the handling of requisitions by the bureau, the instructions appearing on the reverse side of the requisition form with respect to the preparation and transmittal thereof should be followed closely. The need should always be explained when requisitioning unusual or expensive items or extraordinary quantities. The use of proprietary medicines should be avoided as much as possible. When it is not practicable to substitute standard preparations included in the United States Pharmacopoeia and National Formulary, proprietary medicines will be purchased when the requisitions are briefly explained, provided that the articles in question have been accepted for New and Nonofficial Remedies by the Council on Pharmacy and Chemistry of the American Medical Association.

Selection of Equipment.—Hospital equipment is constantly being improved not only in design but also in materials used. This applies to everything used in the institution from surgical instruments to laundry machinery. When opportunity presents itself to secure new articles the latest and best should in all cases be procured. It is comparatively easy to order the necessary items routinely or duplicates of what is already on hand, but the selection of the most improved and modern type of equipment requires a great deal of study and work. Much valuable information may be obtained by visiting other hospitals and seeing what is in use there and consulting with the superintendents as to the desirability and practicability of any new articles which they are trying out.

The advertising pages of the specialty magazines contain much valuable information, but, of course, the claims of the individual manufacturers must be discounted at times. If the hospital is to have the best in the way of equipment, as it should have, the super-

intendent must spend a great deal of time and thought in keeping up to date on what is being offered. Many salesmen must be interviewed and trials made of novelties constantly being offered.

Routine Duties.—It is usually good practice for the officer in charge to meet all the medical members of the staff in his office at 9 o'clock every morning.[2] This is a stimulus to the officers to get there on time and affords an opportunity to discuss the various daily problems. This example in punctuality is helpful and effective.

After the 9 o'clock meeting it is customary for the medical officer in charge to examine the mail and dictate replies to letters and telegrams. It is sometimes desirable to have the chief clerk or other administrative assistants present while the mail is being reviewed in order to assign it to the various divisions which will handle the same.

After the emergency mail has received attention, opportunity usually offers to make a short tour of the wards and other parts of the institution for the purpose of making the daily inspection or performing professional work. After having tried various plans in regard to this visit, it seems better to make it at approximately the same time each day, as the patients then know when to expect it and can consult the officer in charge if they so desire. It is always, however, advisable to make informal and unexpected visits to different parts of the hospital at various hours in order to gain first-hand information as to conditions prevailing, but these visits should be made in addition to the regular daily round through the station.

Saturday Morning Inspections.—There has always been considerable discussion concerning the desirability of Saturday morning inspections. When a muster was combined with the inspection, it must be admitted that a great deal of time was probably wasted. However, stations have been under observation where a Saturday inspection had been omitted, as contrasted with the condition prevailing after the inspection had been inaugurated, and it was very apparent that the inspections had a decidedly beneficial effect.

The special effort which is made to put the station into good order at least once a week will serve to correct certain practices which might otherwise be overlooked. The inspection as now described in the regulations is a much simpler affair than was formerly enforced, and it is believed that all the objections thereto have been removed.

Method of making the inspection.—The inspection should be made chiefly for the purpose of seeing that the proper standards of cleanliness and order are being maintained throughout the institution. The inspection should be thoroughly done, but time should not be

[2] It is important that sick call be started as promptly after 9 o'clock as is possible, as much of the station routine is held in abeyance pending the completion of this function. Hence the officers' meeting held in the morning at 9 o'clock should always be brief, and the discussions confined to essential matters and carried out without waste of time.

wasted, either on the part of the inspector or of the station personnel. Dramatic and spectacular moves, such as rubbing white gloves over the tops of doors or remote parts of the woodwork, should be omitted. It is not reasonable to expect higher standards of cleanliness throughout a hospital than one finds in a well-kept private home. In certain institutions where a large amount of surplus help is available it may be desirable to make an inspection of this kind, but in Public Health Service hospitals the test should be simply ordinary cleanliness and order.

The chief nurse and the matériel officer should report at the office of the officer in charge at the hour designated, and this group should then proceed to make the inspection.

The head of each department or division should await the inspecting officer at the entrance to that part of the building where he is on duty and accompany the inspector throughout his department. In the wards the medical officer on duty on the ward should walk alongside the officer in charge, on his left, and the nurse on the ward fall in behind with the chief nurse.

All parts of the ward should be visited, including the bathrooms, diet kitchens, smoking rooms, porches, etc. Special attention should be given to the *cleanliness* of the *floors* and *windows*, the *spacing* of the *beds*, the *neatness* of the *bed linen* and *linen closets*, the *condition* of *refrigerators* and *diet kitchen stoves*, and to the *tops* of *tables* and, *in winter*, whether or not the windows are *open* with the steam turned *on*. Drinking glasses should be scrutinized against the light to test the efficiency of the washing processes, and the knives and forks also should be examined closely with the same end in view. Inspecting officers will take opportunity to note whether or not soiled linen is being kept under lock and key and the ward is properly ventilated, to see that heat, light, and water are not being wasted, and to observe the general condition of the various parts of the buildings visited; that is, he will look for broken windows, damaged walls, defective plumbing and lighting fixtures which need repair, and similar items. The attention of the matériel officer will be called to such of these as may be corrected and the necessary memoranda made.

The ward orderlies, ward maids, and other attendants responsible for the janitor work on the ward will be required to be present. It is wise for the inspecting officer to comment favorably upon conditions which warrant expressions of approbation. After the personnel have worked hard to put everything in good condition they are anxious to receive, and should receive, a few words of praise; these are a great stimulus to continued effort in the future.

Where minor matters are amiss they may be brought in a tactful way to the attention of the individual concerned. It is never wise at formal inspections to administer any severe rebuke, unless cir-

cumstances absolutely demand it. Reprimands of this sort should usually be given in private. From time to time commendatory notices in regard to the inspection may be posted on the official bulletin boards if conditions are unusually good.

Certain stations have tried the effect of awarding special mention to the ward which showed the greatest improvement or which showed the best condition on Saturday morning. The inauguration of various contests of this sort will at times be helpful in getting up a friendly rivalry in having the best-looking ward or department, especially if the institution has been permitted to lapse into undesirable habits and the employees need a stimulus of some sort.

Informal inspections.—Very often officers in charge fall into a certain routine in regard to the parts of the hospital which they check up. As a result they are at times very much chagrined to find out that undesirable conditions have prevailed for a long time in the regions which they have not inspected. Hence it is very wise to visit all sections of the institution at regular intervals. The localities which are often overlooked in this manner are the baggage room, the record room, dark and dingy storerooms of any sort inconvenient of access, attics, the carpenter shop, unoccupied quarters, and other out-of-the-way places. A list of such rooms should be kept, and the medical officer should keep a record of the inspections he has personally made of commonly neglected corners.

It is not customary formally to inspect the quarters occupied by married officers, as these are considered "the castle" of the individual concerned, and the residents usually resent a formal inspection as a rather unwarranted prying into their affairs. The officer in charge should, however, occasionally visit these quarters, having notified the residents sufficiently in advance, so that they may have time to police up if they desire, and inform them that he is there to look for any conditions which the occupants believe should be corrected or brought to his attention.

Staff Meetings.—The medical officer in charge presides at all staff meetings, and it is a part of his duty to see that these conferences are as interesting and as profitable as possible. On the smaller stations interest in staff gatherings is likely to wane and considerable effort will be required to keep it up to the desired pitch. At the end of each month, a report of the hospital transactions should be discussed at some staff meeting. This report should furnish the following information and may be prepared somewhat in the following form:

U. S. Marine Hospital—Analysis of clinical services for the month ending September 30, 1925

Number of patients remaining from previous month	206
Number of patients admitted	122
Number of patients discharged	119
Number of patients remaining at end of month	209
Total days relief furnished all patients	6,523
Average stay in hospital (days) discharged patients	31.8

DISCHARGES

Recovered	34
Improved	38
Unimproved	2
For disciplinary reasons	1
Transferred to other institutions	2
Deserted	2
Died	1

CAUSE OF DEATH

Pneumonia, hypostatic and appendicitis, acute.	1

AUTOPSIES

Medical	0	Surgical	1

Surgical operations		45
Major operations	23	
Minor operations	22	
Major operations of special interest:		
Appendectomy		3
Excision, scar left arm		1
Excision, tissue for malignancy		1
Exploratory laparotomy		1
Hemorrhoidectomy		1
Herniotomy, left inguinal		3
Herniotomy, right inguinal		2
Incision and drainage, index finger		1
Nephrolithotomy		1
Plastic repair, facial paralysis		1
Proctectomy		1
Resection, benign tumor of rectum		1
Tonsillectomy		2
Varicocelectomy		1

DIAGNOSES

Provisional and final agree	59
Provisional and final disagree	21
Discharged with additional diagnoses	39
Discharged with no diagnosis	0

INFECTIONS

On admission:	
Surgical	4
Medical	32
Institutional:	
Surgical	0
Medical	0

CONSULTATIONS ON CASES DISCHARGED

Ear, nose, and throat	13
Eye	3
Genito-urinary	2
Medical	3
Neurological	1
Surgical	4

CLINICAL LABORATORY

Total examinations	678

X-RAY DEPARTMENT

Total exposures	313

PHYSIOTHERAPY DEPARTMENT

Total treatments	981

DENTAL DEPARTMENT

Total number of treatments	388

Out-patient transactions at hospital:	
Number of out-patients	------
Number of treatments	------
Number of physical examinations	------
Out-patient offices:	
Number of patients	------
Number of treatments	------
Number of physical examinations	------

The local consultants can be persuaded to come to the hospital from time to time and give a practical talk on their various specialties. Such discussions will greatly augment papers which are prepared by the regular staff and read.

Another excellent plan is to have the officers visit in rotation the various medical institutions of the city for the purpose of looking up certain new or interesting forms of procedure which may be in force there and reporting on the same at the ensuing staff meeting. An occasional review of some current medical magazine may bring out many helpful points.

It is always in order at staff meetings to present interesting cases from the wards for general discussion and study.

While staff consultations are primarily intended for the purpose of improving the professional qualifications of the staff, opportunity is also here afforded to discuss changes in regulations, various matters of hospital policy, and also to explain to the officers who have recently reported the methods of procedure along various lines.

It should be noted that the regulations require that a special record shall be kept of whatever meetings are held, and on this record shall be set out in detail the reasons why any staff meetings are omitted.

Contact with Local Authorities.—No one lives to himself alone, and this is just as true of a hospital as of an individual. Friendly relations with various city organizations will often prove to be most helpful.

Superintendents of local parks.—Sometimes park superintendents will donate plants, cuttings, shrubbery, or young trees to the hospital if their own supplies are ample enough to warrant. Their men are usually very willing to give information in regard to horticultural matters, such as the pruning of trees, and it may be possible to secure the loan of a heavy roller or some special piece of apparatus which the institution does not have.

Fire department.—The fire chief or one of his deputies will, on application, visit the station and give what advice he can in regard to the existence or removal of fire hazards. Special hose connections or nozzles can sometimes be secured from the local fire department.

Police department.—Reference is made in another place to securing the help of the city police when they are needed to quell a disturbance in the wards; hence it is always well to have the members of the force distinctly understand that they are held in high esteem by the hospital personnel and that courtesies are willingly exchanged.

In line with the above, the various representatives of the departments just referred to should be welcomed on the reservation whenever they come and be made to feel at home rather than that they are intruding. Should they ask for advice in regard to their own affairs which are correlated with those of the station it should be freely given. Any little attention that may be shown to city employees when they happen to be at work near the reservation, such as supplying them with ice water or permitting them to come in and eat their lunches in the shade of the trees, or administering first aid in the case of acci-

dents, will be much appreciated and help to maintain the *entente cordiale.*

Local health department and medical profession.—The officer in charge should join the local medical society and induce as many of the members of the staff as he can to do likewise. Attendance at the society meetings will be profitable in many ways besides the benefit derived from hearing the medical papers read and the discussions. Friendships with the doctors practicing in the community will be a source of pleasure and social relaxation, and contact with them will be advantageous from a service standpoint, as information will be obtained concerning the health of the community, which often is of great use to the bureau in its public health activities. The medical profession is the profession of the hospital worker, and he should, of course, be closely associated with it not only in public life but also in social affairs, to obtain the advantages which come from affiliation with men of similar tastes and inclinations.

Special pains should be taken to keep on the best of terms with the local health authorities. Service hospitals should punctiliously comply with all local health regulations compatible with the regulations, and training along this line is most useful and essential for the internes. The hospital and its staff should be organized as a part of the local community and should support and give their aid to local projects whenever practicable.

MISCELLANEOUS ITEMS WHICH REQUIRE SPECIAL SUPERVISION

Experience has shown that there are certain routine items which the officer in charge of the hospital must himself inevitably check up frequently if he wishes them to be properly done. Under this heading would come the following:

1. The holding of the weekly fire drill.
2. The vaccination of service employees.
3. The periodic counting of service property.
4. The checking of the waste of heat, light, and water.
5. The correct taking of histories.
6. The balancing of the narcotic books and records of liquors.
7. The reporting of seriously ill patients. (This is usually given fairly good attention on the part of ward surgeons, but every once in a while it will be omitted.)
8. The periodic inspection of boilers and elevators.
9. The filling of fire extinguishers and testing of fire apparatus, such as hose.
10. The condition and equipment of the morgue.
11. The serving of *hot food* in the wards.

Maintenance of Morale.—The officer in charge of a station has been given authority over all his subordinates. The holding of this higher

place makes it incumbent upon him to conduct himself at all times so as to be worthy of the confidence which has been tacitly expressed in placing the institution under his control. Higher authority always carries with it increased responsibility, and it behooves the chief of the staff to set an example to all along every line of official endeavor. It is absolutely essential that he be punctual in his appointments; that he be courteous at all times; that he be interested in his work; and that he maintain a high standard of professional achievement. The only way to obtain respect is to deserve it. The mere possession of temporal authority will not convey imaginary merits upon the holder.

The greatest mistake the head of an institution can make is to assume that his subordinates will show greater zeal in their work than he himself does, and he should be wary of this pitfall. If he permits outside interests, family cares, favorite pastimes, or social duties to encroach upon the time he should devote to his official work, he will inevitably find that his personnel will follow in his lead and eventually "go him one better." The successful management of a modern hospital requires all the traits of leadership necessary to success in any walk of life. The problems are often difficult, their solutions requiring broad knowledge of human nature and a sympathetic appreciation of the feelings of the other fellow. Frequently results must be secured with insufficient equipment and with personnel inadequately trained or endowed with low mental attainments.

The difficulties which arise may usually be surmounted by the use of an ordinary amount of *common sense*. The officer in charge should especially avoid the somewhat common practice of referring all his problems to the bureau for solution. He is on the ground and knows the means he has at hand which can be applied advantageously. When difficulties occur and the facts have to be reported to the Surgeon General, the officer should in every instance make recommendations looking toward the proper handling of the situation and not expect suggestions of this sort to come from the offices at Washington.

Criticism of the Bureau.—In line with the above, the officer in charge should never permit himself to make ill-natured remarks about those in authority over him, nor should he permit his junior officers to do so. Some one must lay down the various policies of the service, and when they have been promulgated it is the duty of all to obey them cheerfully and willingly without complaint. It is highly important that the senior officer on the station should set an example in this respect as well as in the matters indicated above.

Medical officers in charge will note that a great deal of gossip is brought to their ears concerning the conduct and inefficiency of various members of the personnel from the medical officers down. Some of the statements which will be made by apparently responsible persons will be derogatory and correspondingly disconcerting. All

sorts of accusations, both veiled and frank, may be made against various members of the force. The inexperienced officer, upon receipt of such information, will sometimes rush precipitately into action, only to find, after he has stirred up a great deal of ill feeling among the employees, that the accusations were made on very insufficient grounds and that he has unwittingly seriously disturbed the morale of the station.

One of the hardest traits to acquire, for those in positions of authority, is the ability to suspend judgment in a case until all the evidence shall have been collected and carefully reviewed. When one employee comes in with tales of misconduct concerning another, it is wise always to postpone all action in the matter until discreet inquiries have been made in an unobtrusive manner and the accusations have been carefully corroborated or disproved without letting the station in general know that anything like an investigation is being carried on. The greater part of these rumors will be found to be absolutely untrue, though usually some of them are based on some slight foundation of fact. It is a peculiar trait of human nature that many persons love to bear tales, and sooner or later some member of the force will communicate to the medical officer in charge most of the talk that is circulated throughout the station. It is advantageous for the officer in charge to know what rumors are being disseminated, and all of them should be sufficiently investigated to determine whether or not misconduct is occurring.

A great deal of jealousy may exist between the heads of the different departments in a hospital. This is manifested by ill-natured criticism of each other and frequently by efforts to belittle the chief of another division or to make the medical officer in charge look upon him with disfavor. As this tendency is natural and apparently inherent in human nature, the medical officer in charge should exercise great care not to arouse it unnecessarily and try to promote good feeling among his subordinates, and he should never repeat remarks of this sort to the individual concerned.

It is very unwise for the officer in charge to play favorites or to associate socially more with one member of his staff than he does with others. While social relations with the various persons who make up the higher grades of the personnel are necessary and helpful to good feeling among all concerned, nevertheless invitations to the home of the officer in charge or other entertainment of the sort should be fairly and equally distributed among the members of his staff.

If one member of the official circle is received more often than the others, the fact will be promptly noted and it will be assumed that every official act concerning this person is prejudiced on account of his association. It would appear that if the officer in charge must err at all along these lines, he had better make the mistake of not

being sociable enough rather than coming too much in contact with some one member of the hospital family. It is rather embarrassing and not at all for the good of the institution to have the chief nurse, the matériel officer, or some one else known as "the second in command."

Making out Efficiency Reports.—Officers in charge must give the greatest thought to the preparation of efficiency reports. These reports should represent a summary of the officer's opinion of the subordinates, presented in such a manner as to make them a valuable part of the officer's permanent records. The efficiency reports are carefully scrutinized at the bureau, and the accuracy in description and the manner of preparation of these reports constitute one of the highly important means by which the bureau appraises the judgment and executive ability of the officers in charge.

Instructing the Personnel in Station Policy.—An important aid in the securing of the proper conduct of a hospital is the training of its employees in the policy of the institution as a whole.

Whenever practicable this policy should be expressed in words and brought constantly to the attention of the personnel by being incorporated in the station regulations, printed on suitable placards or bulletins, and further demonstrated by the example of those in authority.

The actual wording of the communications setting forth the aims of the institution will naturally depend upon the medical officer in charge, but the following is submitted as a guide which may be useful in formulating communications of this sort:

All employees are requested to assist the medical officer in charge in accomplishing the following aims:

(1) To furnish the most improved and modern medical and surgical service to our patients.
(2) To keep the institution clean and in good condition at all times.
(3) To endeavor constantly to improve the plant, equipment, and grounds.
(4) To treat all patients kindly and with consideration.
(5) To see that all persons coming to the hospital are given prompt and satisfactory service, whether they are patients, visitors, or callers on business.
(6) To establish friendly and helpful relations with the public generally, especially those concerned with shipping and seamen, other Government agencies, local health departments, other hospitals, and various philanthropic associations.
(7) To be patient, courteous, and considerate at all times.
(8) To economize on all Government supplies, and carefully to safeguard and prevent the loss of service property.

Courtesy.—An important factor in the morale of the station is the training of the personnel in the use of courtesy toward the public and toward each other. Business enterprises throughout the country have for some years realized the necessity of a kindly and friendly attitude

on the part of their employees toward the patrons; and what is essential in business is equally as necessary in hospital work. Common courtesy not only prevents disputes and needless mental irritation, but makes the performance of ordinary hospital work very much easier. It is to be regretted that the majority of the complaints which the head of an institution receives nowadays are concerning either the lack of courtesy or the consideration shown by employees towards patients or the public. This dissatisfaction could have almost always been avoided had the offender used sufficient tact or been endowed with ordinary kindness. Employees should not be permitted to give short and gruff answers to persons asking for information or approaching them for one reason or another.

One of the best methods to insure the proper attitude on this question is to impress the employees with the fact that the giving of service to the sick or their friends is a privilege and carries its own reward. If the force is once imbued with this doctrine, courtesy and sympathy will automatically prevail; and while a smile and pleasant manner are welcome, even though forced, nevertheless real interest is deeply appreciated and pays even larger dividends in the shape of securing the good will of those coming in contact with the institution.

Telephone Service.—The modern hospital has a great deal of its contact with the public through the telephone, and it is important that this service be transacted promptly and efficiently. Most institutions take great care that in the executive office anyone representing the responsible head of the institution has the necessary training and mental capacity to handle visitors effectively and without giving offense to those who are denied a personal interview with the superintendent himself, but telephone operators are usually poorly paid and not especially trained in such duties.

The person in charge of the switchboard should be polite at all times, thoroughly acquainted with the organization of the institution and able to refer callers on the telephone to the proper person to give them the advice, assistance, or information required. To furnish such service requires considerable native intelligence and a generous supply of good nature, as ignorant people are frequently tiresome and annoying in their requests for information which can not be supplied or is not available. Good telephone operators are important factors in a hospital, and sufficient salaries should be paid to insure securing the type of employee desired.

PHYSICAL COMFORT OF EMPLOYEES

As a certain number of employees live in quarters provided by the Government, the furnishing and upkeep of these living habitations must be given due thought and attention. All furniture and fittings wear out in time and should be replaced, when necessary. When

this is done, opportunity may be afforded for making needed improvements in the equipment.

Officers' Quarters.—The furniture in the officers' quarters should be as attractive and comfortable as possible. If it is not adequate, an effort should be made to secure a better supply, and such articles as need reupholstering or refinishing should be treated appropriately. The kitchens should be supplied with sufficient household appliances to enable housekeeping to be done with reasonable ease and rapidity.

Nurses' Home.—The nurses' home should be furnished so as to make a pleasing appearance. Suitable curtains and hangings should be provided, and also such simple ornaments as may be essential to give the reception room and hall a homelike appearance. The nurses usually do a certain amount of sewing and laundering for themselves; hence a sewing machine and laundry tubs in the basement with suitable ironing boards and electric irons will add much to their happiness. A kitchen or kitchenette in which they may prepare simple dishes will be appreciated and is essential for the making of refreshments for their social entertainments.

Attendants' Quarters.—Each room should be fitted at least with a comfortable chair, a small table, and a good reading light for use at night. Lockers or closet space should be provided, and also a suitable dresser of substantial construction. Whenever practicable it is wise to have the furniture in these quarters uniform in type and finish. Simple curtains should be furnished for the windows, and the men should be encouraged to make their rooms as neat and orderly as possible, but they should not be permitted to paste lithographs, calendars, and the like on the walls. A recreation room for smoking and playing cards should be provided in or near the attendants' quarters.

Rest Rooms.—In the main building some sort of a rest room is essential for the comfort and convenience of the day force, especially the female personnel. This room should be equipped with a bed or cot so that in emergencies there may be a place where a sick employee may rest in a recumbent position for an hour or two. If facilities of this sort are not available, it may be practicable to secure this space by some rearrangement of the station's activities.

Entertainments and Amusements.—Provision should be made at the station for entertainments and games for the station personnel.

Social entertainments.—In recent years it has been customary to have social entertainments for certain of the station personnel, especially the nurses, who are in many instances strangers in the city in which they are on duty. At times parties of this description are very successful and quite an important feature in assisting to maintain the morale of the personnel. In other instances the entertainments do not afford an adequate return for the effort expended and are

apparently not worth while. The conditions existing at the different hospitals will serve to determine how much time and effort should be given to getting up social gatherings for the personnel, as no two institutions are alike in this particular. Dancing and cards are the diversions most popular for station parties and seem to make the most universal appeal.

It has been repeatedly noted that at hospital entertainments there is usually a lack of men and that some of the personnel sit around and do not participate at all in the dancing or other diversions. To overcome this, it is an excellent plan to start off with a Virginia reel and make everyone take part, both old and young, as anyone can walk through the figures of this dance. Afterwards in the dancing, the Paul Jones, at frequent intervals will do a great deal toward breaking up any stiffness and formality.

Tennis.—The general tendency of the hospital personnel is to take less and less exercise, a practice ultimately detrimental to their health. Tennis is a game that gives the maximum results for the time demanded, and the amount of strength and activity put into the game may be controlled to a large extent by the desire of the players. For these reasons it is a suitable recreation for both young and middle-aged persons and provides an attractive form of sport at the minimum amount of expense. (Information regarding the construction of tennis courts will be found at the end of Ch. VI.)

Table tennis.—Table tennis is an excellent game for wintertime or when the weather is inclement. It is played on tables of various sizes with ping-pong balls and rackets.

The regular table is 9 feet long by 5 weet wide. Smaller tables can be utilized, but the larger ones afford more exercise. The net is 6 inches high. The table should be placed in a room affording sufficient space to the rear and sides, at least 5 feet on the ends, 7 feet if practicable. As the players acquire skill, the balls may be driven with considerable force and speed, and so ample room will be required to field them properly.

The net may be improvised from bobbinet or even simple muslin. The rackets are made from a light piece of wood, about the weight of cigar-box wood, cut in an oval 6½ inches wide by 7¼ inches long, with a handle about 4½ inches long and shaped like the handle of a tennis racket, and almost as thick through. The playing surface of the rackets is covered with coarse emery cloth, which is glued in place. The table should be about 30 inches high, and may be especially built for the purpose or composed of a board top which can be set on horses, smaller tables, or similar supports.

The game is played and scored exactly like tennis, except that the serve must be underhand, only one ball is allowed for a service, and the service court is composed of the entire table on the side of the

receiving player. In returning the ball it must always be played on the first bound and never volleyed.

Some tables are painted green, with a 1½-inch white stripe around the edge and down the middle. On tables of this type the service is made into each half of the table alternately.

The equipment for this game is extremely simple, and with the exception of the balls it can all be homemade. The amount of exercise to be derived from table tennis is surprising to those who have not actually tried to play. It will be found to be especially beneficial for sedentary people, as the stooping to pick up the balls is excellent exercise for the abdominal muscles. The game also has the advantage that it can be played at all seasons, and while affording plenty of opportunity for agility and skill, is not too violent for elderly people.

Other amusements.—The children from the quarters will appreciate a swing, and a sand pile will be of benefit to the toddlers. The last item may be best provided by making a shallow box about 6 or 8 feet square and 1 foot high, and putting a load of sand in it. The sand yard should be located in an inconspicuous location on the reservation.

Care of Unoccupied Quarters.—At times a set of furnished quarters will remain unoccupied for various periods. It is highly important that such buildings be given suitable supervision. Windows may blow open, admitting snow or rain, or the plumbing may freeze and burst, resulting in great damage. The writer has known of one case where moths did serious damage to upholstered furniture and rugs in a three months' interval during which the apartment was closed.

Such vacant quarters should be under close observation at all times and inspected by the matériel officer at sufficiently frequent intervals to insure safety, certainly at least once every two weeks.

Maintenance of Cleanliness and Order in Attendants' Quarters.—The keeping of the attendants' quarters in a neat and orderly condition has always been a problem in service hospitals. Some of the men are well trained and maintain their rooms in a highly commendable condition, but unfortunately others are careless and heedless, and require considerable supervision to keep them up to the approved standards. A member of the personnel, such as the matériel officer or chief nurse, should be made responsible for the condition of these quarters, and it is essential that the designated person should inspect them at least once a day. It is customary to have each man make his own bed and keep his own room clean, a certain amount of time being allowed for this purpose. The required janitor work in the halls, bathrooms, toilets, etc. is usually assigned to one or more employees, who are required to keep these parts of the building in good order.

A *house committee*, composed of the older and more responsible attendants, may be designated by the medical officer in charge, to draw up suitable rules for his approval for the conduct of the barracks,

and every effort should be made to appeal to the self-respect of the occupants so as to make them, so to speak, a self-governing body in such matters.

Correction of Fire Hazards.—Experience has shown that fires begin more often in certain parts of a hospital than others. The kitchens, laundry, laboratory, and the store rooms are all locations in which fires are likely to occur, and this should be constantly borne in mind when inspecting these departments. Faulty or complicated electric wiring is a frequent cause of fire, and care should be taken that only qualified employees are permitted to do this work. Attendants should not be allowed to run wires in their rooms or quarters without proper supervision.

Electric irons have been responsible for a number of fires, because they were left turned on and forgotten. At the holiday season the Christmas decorations may be placed in close contact with electric lights, with considerable risk of disaster. Cotton batting on or around the trees is always liable to be ignited.

Old rags, condemned bedding, and the like, when stored away in warehouses, have at times burst into spontaneous combustion.

The station garage is always more or less a fire menace unless it is carefully supervised, and suitable restriction in regard to smoking, keeping the floors clean and free from grease, and placing all greasy waste in proper receptacles outside of the building should be enforced. A good supply of sand and fire extinguishers of the Pyrene type should always be available wherever automobiles are kept.

Library.—Every hospital should have as extensive a library as is possible. Reading is, of course, a great boon to the sick and those confined indoors, and it will be found that books are in great demand, some patients reading as many as two a day.

Hospital libraries are usually maintained by the donations of generously inclined people, and it is seldom that opportunity affords to make a deliberate selection of many books. Light reading, especially fiction and detective stories, are very popular. Technical books on the subjects in which the men are interested, such as marine engineering, mechanical drawing, electrical wiring, radio, mechanics in general, and books on history and travel are often consulted and studied. Some books in the various foreign languages will be welcomed by patients of alien birth. Current magazines of all sorts and the daily newspapers will be much appreciated.

Recently rather extensive articles have appeared discussing the proper make-up of hospital libraries as concerns the type of reading most suitable for the sick, especially those who are depressed. If considerable funds are available, the selection of the books should, of course, be given careful consideration and considerable study. Advice on this subject may be obtained from various library associations and

other sources. As a very large percentage of the patients have a normal mental trend, the sort of a library which is enjoyed by the public at large will ordinarily be found quite suitable for institutional use.

Smoking and Recreation Rooms.—Smoking and recreation rooms are almost essential. Such places afford the men an opportunity to play cards, write letters, and otherwise divert themselves without disturbing the patients in the wards. All these amusements are accompanied by the production of dirt and disorder, and the establishment of a smoking and recreation room is a great assistance in keeping the wards in a clean and orderly condition. The furniture should be plain but substantial, and every effort should be made to make the place as homelike as possible. If there is one large recreation room for the entire hospital, it forms an excellent place for the exhibition of movies and the giving of various entertainments from time to time.

Radios.—Radios are a great source of amusement and diversion for many patients, especially those of a chronic type. The most suitable instrument for hospital use is that equipped with ear phones so that no one is disturbed. Loud speakers in the ward are likely to be a source of annoyance. It is entirely practicable to wire an institution so that sockets are provided in each room or at each bed, in which ear phones may be plugged for the use of the individual patient. Such an installation requires one or more central receiving sets in some designated part of the plant, which should be operated by an attendant. If this kind of service is furnished, the listener must accept the program presented and can not tune in on other stations at will, although some of the installations provide for a choice of one of two stations by the turning of a switch at the bedside. It is possible to get portable sets which do not require either aerials or grounds and which are quite suitable for private rooms. All radio apparatus is subject to certain mechanical breakdowns and requires careful and competent supervision to keep it in good running order. The servicing of any apparatus of this type is more expensive than is commonly believed.

A good radio set installed in the recreation hall will afford the patients much entertainment. Provisions, however, should be made for protecting the apparatus so that inexperienced persons may not injure or abuse it. A set which is operated by the public is very likely to break down in a short time.

THE MEDICAL STAFF

Executive Officer.—At some of the larger stations one of the medical staff is detailed as executive officer for the purpose of relieving the officer in charge of a certain part of the routine duties, which must be handled by centralized authority.

The executive officer's duties usually are—

To arrange and approve leaves of the medical staff.

To make temporary assignments of medical officers so that the wards are covered in case of sickness or emergency.

To pass on the applications for leave of all employees.

To interview most visitors for the purpose of ascertaining whether their business is of sufficient importance to be referred to the officer in charge.

To act as the officer in charge in his absence.

To perform whatever other duties, as a routine measure, have been assigned to him.

An executive officer is the first assistant to the medical officer in charge and is required only at the larger stations where a great deal of detail work must be performed, which would unnecessarily burden the head of the institution.

Clinical Director.—When an executive officer is not on duty, sometimes one of the medical officers acts as clinical director. This officer usually has direct charge of the professional work of the hospital, coordinating the various services. He sees that the wards are covered in emergencies, that the histories are being correctly written and properly filed, and to him usually is referred any correspondence concerning patients, such as the preparation of abstracts, clinical reports, and the like. The clinical director in smaller hospitals may have charge of a ward in addition to his other duties.

Chiefs of Surgical and Medical Services.—In the larger hospitals where the volume of work warrants, medical officers may be assigned in the above capacities. Such officers perform the duties which ordinarily would be intrusted to the chief of the service, coordinating and correlating the various units under them. The chief of the surgical service usually does the major part of the operating in addition to his other work.

Ward Officers.—The duties of the ward medical officers have been quite extensively covered in the section on ward management, so that very little remains to be added here. Such officers are directly in charge of their wards and are held responsible for the treatment of patients therein and, with the head nurse, for the safety of the Government property on the ward.

It is best to have it clearly understood that the ward surgeon himself is responsible for seeing that his patients receive proper medical care even though a consultant may have been called in. If this point is not decidedly stressed and plainly pointed out, there is likely to be a confusion of authority between the consultant and the ward surgeon, out of which uncertainty conditions may arise which result in neglect of the patient.

STAFF OF THE UNITED STATES MARINE HOSPITAL, NEW ORLEANS, LA., 1929

The ward surgeon will, of course, take the advice of the consultant; but the case is still his, and he should realize that it is his duty to see that proper treatment is administered, and if everything is not progressing satisfactorily to report at once to the consultant or medical officer in charge.

Ward surgeons should not be made to feel that they are merely "clinical clerks" writing up histories, nor permitted to shift the entire responsibility of a case to some one else, but that they should proceed just as they would if they were treating the patients in private practice and from time to time calling in a consultant. Considerable confusion has arisen at various times on this point; hence the matter has been especially discussed here.

Medical Officers Making Special Studies.—The officers will frequently request permission to take special courses or to attend outside clinics, and every opportunity consistent with the welfare of the institution should be afforded them in this respect. It must be understood, of course, that their hospital duties are paramount and must be given first place, and that the whole hospital routine can not be changed in order to permit them to attend lectures or demonstrations at some outside point.

With this stipulation in mind, however, it is very important that officers desiring to broaden their experience should be given every help and encouragement. The medical and surgical service furnished by the individual in question will be very greatly improved by permitting him to take special training, and it is only natural that ambitious men should seek to extend their knowledge.

At times it has been observed that officers who have been permitted to specialize resign from the service. No weight should be given to this as an argument against permitting attendance at postgraduate courses, as the hospital receives very much better service from these men while they are taking their training and the work of the institution is put on a decidedly higher plane.

Good men are bound to develop, and no obstacle should be placed in their way if they find that a better field awaits them in private practice than in the Government work. The fact that the service offers opportunities to men to enter the corps for a period and develop themselves into specialists so that they may afterwards obtain fine practices on the outside is in itself a good argument to secure candidates for the corps. It would seem that all service institutions have profited by the time that officers of this type have been on duty.

Internes.—Internes at service stations have approximately the same duties as are assigned to them in other hospitals. Their services are rotating, in order that the young graduates may receive training in all the fundamentals. It is not customary to place internes in charge of wards or in charge of the out-patient office, but they are

assigned to the wards under the supervision of the regular ward officer, who permits them to perform such duties as their aptitude and experience warrant.

A great deal has been written on interne training; but as these young men are very likely to be suffering from a sort of mental indigestion due to an overindulgence in theory, it is well to see that they are given as much practical work as is possible, especially in the examining of patients, writing histories, doing dressings, assisting at operations, giving anesthetics, and operating under competent supervision.

All internes should receive sufficient instructions in the X-ray laboratory so that they can operate the X-ray machine and develop the films. The laboratory training should cover blood counts, hemoglobin estimating, staining of sputum and other smears, examination of blood for malaria, microscopic examination of feces, and the ordinary forms of urinalyses. As the course is usually but a year, it does not seem wise to have them put too much of their time in the laboratory and neglect bedside instructions. Some time and attention should be devoted to prescription writing, as recent graduates appear to be woefully lacking in this art. The writer believes that the interne's year should be devoted to accumulating as much practical experience with sick people and actual hospital practice as is possible, and that during this period the study of theory should be subordinated to practice.

Out-Patient Department.—The out-patient dispensary is the field station which supplies the hospital with most of its clientele. It is highly important, then, that the out-patient service be so conducted as to inspire the confidence of the seamen visiting the office. Many of the men get their first contact with the service here, and the impression gained may be a more or less lasting one. The medical officers should be correctly uniformed, and the equipment and furnishings of the office itself as complete and up to date as circumstances will permit.

The number of patients coming to the office varies greatly in different hours of the day; hence some system should be put into effect so as to avoid having the applicants wait for a long time in the reception room before receiving their appropriate care. It is entirely practicable to have some one interview each man as he comes in and find out whether he is acutely ill or not, and such sick men should be waited upon immediately. When it is evident that a number of patients will have to wait for a considerable period before the doctor can reach them they should be informed of the fact and given the opportunity to utilize their time in some other manner if they desire, rather than sit in the office for several hours.

The officer in charge of the out-patient division can do a great deal toward avoiding reasonable complaint by giving his personal attention to the factors above enumerated, as not infrequently sailors become disgusted on account of having to wait a long time and go to some other clinic. The medical officers detailed to the out-patient office are likely to lose contact with the hospital if they are kept on this duty for long periods; hence the plan of rotating service in the dispensary with hospital duty is an excellent one, wherever it proves practicable.

Quite frequently the records of the out-patient office are rather inadequately kept and very little information can be derived from this source. The great need of keeping complete records in this phase of the work should always be impressed upon the officers on duty there, and the files should be frequently examined to see that the instructions are being obeyed.

Dental Clinic.—The dental clinic is in charge of a dental officer and such junior dental assistants as may be necessary. One or more nurses or a typist may be detailed to the dental clinic to assist in keeping the records and to help the operators in handling and sterilizing instruments and in preparing amalgams and the like. If nurses are assigned to the clinic they are usually rotated on this duty.

The dental clinic fills a very wide field of usefulness and usually has a greater number of patients than can be handled, so that only the most necessary work can be done, preference being given to acute cases and those oral conditions which affect the general health.

The dental equipment furnished by the bureau is very complete and modern in type, and this division of the hospital has brought a great deal of credit to the service by the high standards which have been developed and maintained.

Physiotherapy Department.—Completely equipped physiotherapy departments are maintained in all the larger hospitals, and this service has been found extremely useful—in fact, absolutely necessary.

The term physiotherapy is applied to a variety of forms of physical treatments, such as massage, heat, light, and electricity, as contrasted with the administration of drugs. Many of these modalities are old and of proved efficiency, while a few are new and still under trial.

Unfortunately, the overenthusiastic advocates of physiotherapy have at times prejudiced many members of the profession against this form of therapeutics by their extravagant claims and unscientific statements, so that a certain amount of skepticism has arisen concerning this field of medicine. However, there can be no doubt of the beneficial results of massage, passive motion, contrast baths, and heat in selected cases, whether it be administered in the form of light baths, electric bakers, diathermy, or derived from other sources.

Ultra-violet light is a curative agent in rickets. The usefulness of the high-frequency currents of the various types is not so well established, but the effectiveness of the other modalities above enumerated is not questioned by the well-informed practitioner.

The physiotherapy department finds its greatest field of usefulness in the treatment of traumatic cases such as fractures, dislocations, and sprains, and a large number of patients in this field are treated with great benefit in service hospitals. The department should be under the direct charge of one of the ward surgeons who has had sufficient training along this line. The actual work is performed by aides, usually women. All patients referred to the department should come with a prescription from their ward surgeon or a consultant who has seen them, describing in detail what sort of modality is to be applied. At times patients are referred to the clinic without any specific instructions as to what is to be done, the matter being left largely to the aides. This, of course, is an indefensible practice, and all the medical officers on the station should be given sufficient instructions in physiotherapy so that they may be able to prescribe intelligently the simpler forms, which fortunately are the most valuable.

There is one point about physiotherapy which can not be stressed too greatly, and that is the tendency of convalescents to prolong their absence from work because they are receiving this treatment. The reason for this is not difficult to explain. Physiotherapy applications, for the most part, are soothing and comforting, and the patients like the treatment. Broken bones and sprained joints are likely to be painful for many months, and the ministrations of the physiotherapy aides alleviate the pain and increase the comfort of the sufferer; hence, there is considerable temptation to keep coming to the hospital for an unreasonable period for this short solace. Compensation cases after fracture of the leg have been known to remain from duty for months after they were up and about, on the excuse that the injury continued to be painful and they were still receiving physiotherapy. These patients often do not realize that after accidents of this sort a certain amount of pain must be expected upon resuming their occupation and think they should be kept on a compensation basis until all discomfort has disappeared, which would in some cases mean months of absence from work after functional recovery is practically complete. There has also been noted a tendency in service hospitals to start individuals on physiotherapy and permit them to continue it for a much longer period than there is any probability that good results will accrue, thus throwing an unnecessary burden on the physiotherapy department.

To correct the abuses mentioned above, it is wise to adopt a plan whereby all patients coming to this clinic must be examined at 10-

day intervals to determine whether or not the treatment is any longer required, and to require them to obtain a new prescription every 10 days.

The number of aides required in a hospital will vary with the number of beds and the nature of the cases admitted, especially the percentage of injuries. It should be remembered, however, that physiotherapy is a more or less expensive form of treatment, and if other measures are equally good and cost less there is no particular advantage in using the physiotherapy department.

In the opinion of the writer, in marine hospitals with the ordinary type of clientele, one aide is amply sufficient for 150-bed institution; arrangements must be made, however, to replace this employee when on leave of absence or when sick.

NURSING SERVICE

Only graduate nurses are accepted for duty in service hospitals, as at the present time no training schools are being conducted. Ordinarily there is about one nurse for each 10 patients

Organization.—Following are the designations of nurses in marine hospitals:

Chief nurse.
Assistant chief nurse.
Head nurse.
Staff nurse.

Applicants for the nursing service are first appointed as staff nurses; the next higher grade is head nurse; then comes the assistant chief, and finally the chief nurse. There is a superintendent and an assistant superintendent of nurses on duty in the bureau at Washington.

Staff Nurses.—The work of the staff nurses is similar to that usually performed by nurses in general hospitals and consists of the customary nursing care of the sick, writing the nurse's clinical records, and the keeping of such other books as may be required on the wards. In addition the staff nurses have other duties, necessitated by the special requirements of the Public Health Service.

A very important function of the staff nurse is the supervision of the orderlies or ward maids in the performance of their duties, which includes the maintenance of cleanliness and order in the wards and their annexes. The nurses should be familiar with the proper treatment of hardwood floors, suitable methods of cleaning woodwork and painted surfaces, and the means to be utilized in taking care of tiled floors in bathrooms and similar locations, as the use of unsuitable cleaning agents in such work may result in irreparable damage.

Ward nurses also attend to the serving of trays to bed patients; and if there is a diet kitchen on the ward and no dietitian regularly

attached to the same, they are expected to supervise the work done in the kitchen, being held responsible for seeing that the china, silverware, and glassware are kept clean and in good condition.

The successful supervision of orderlies and maids requires a certain amount of diplomacy and tact. Occasionally nurses are encountered who have had excellent professional training but are not able to get the desired results from the help under them.

The safeguarding of the equipment on the wards, as bed linens, instruments, etc., is an extremely important duty of the ward nurses, and this detail must be constantly borne in mind and the various articles frequently checked.

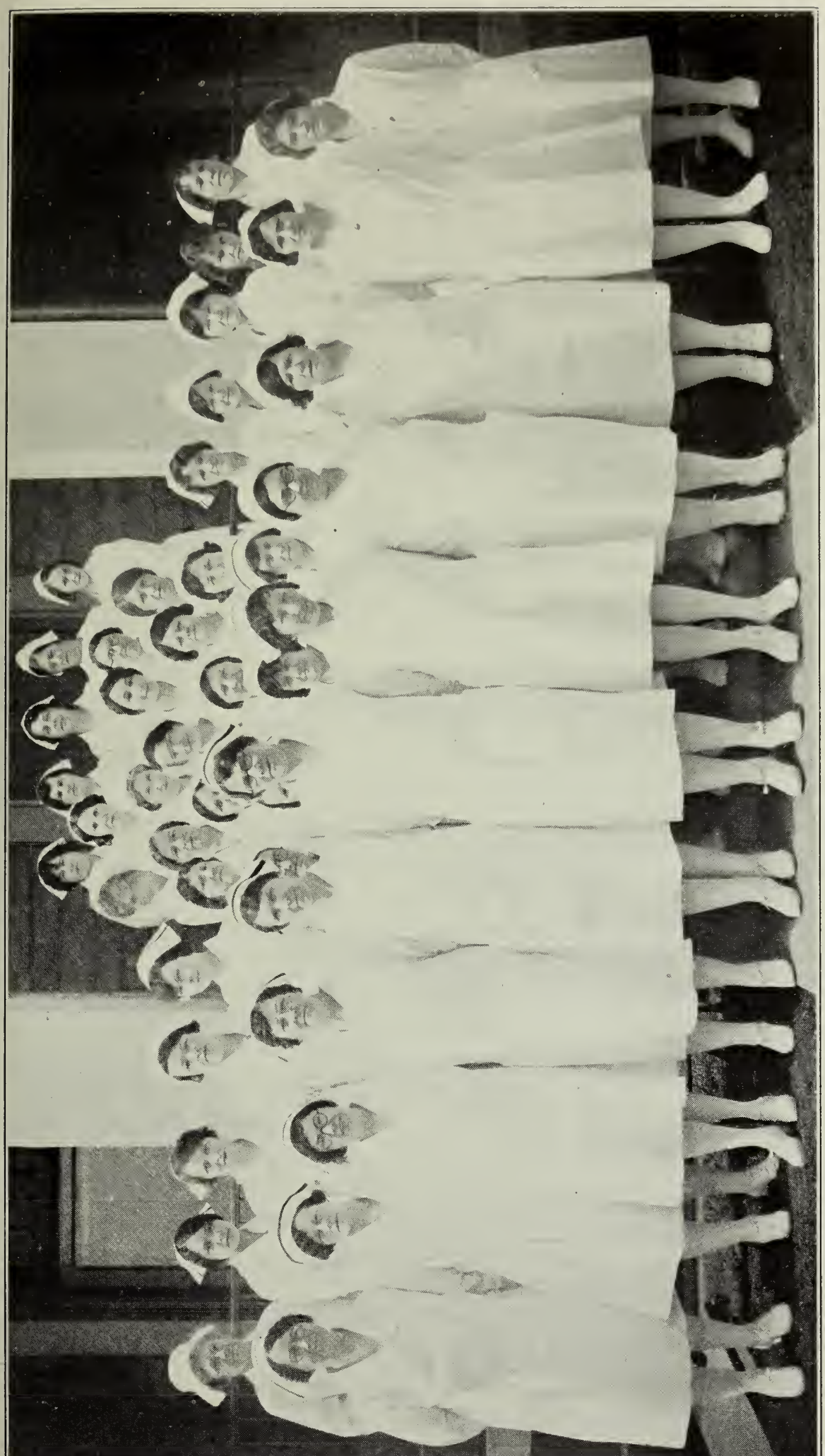
Head Nurses.—Each hospital is allowed a certain number of head nurses. It is customary, when possible, to have a head nurse detailed in charge of a ward with staff nurses as assistants. While this plan is desirable, it does not always obtain and often staff nurses are assigned to be in charge of wards with other staff nurses under them.

The duties of a head nurse are essentially those of a staff nurse, as detailed above, except that she is usually in charge of a ward and has supervision over all the staff nurses and employees on that ward.

Chief Nurse.—The chief nurse has general supervision over all nurses on the station. She assigns them to duty, superintends their work, and arranges for their time off and for their annual leave. She also is held responsible for the cleanliness and order of the wards and the nurses' home and, at some stations, of other parts of the hospital.

The officer in charge usually handles through the chief nurse all individual problems arising from the nursing service, although it should always be clearly understood that any nurse or other employee is free to confer personally with the senior officer, if she so desires. If a nurse should discuss hospital matters with the superior officer directly, consultation should always be held with the chief nurse before arriving at any decision which concerns the nursing service. Instructions, criticisms, and reprimands should be administered through the chief nurse rather than directly unless some special emergency makes immediate action necessary.

One of the most important functions of the chief nurse is to see that the wards and their annexes are maintained in a high degree of cleanliness and order, and this is oftentimes the most difficult task she has to perform. Observation has shown that graduate nurses usually perform their purely professional work in a highly satisfactory way, but in many instances their training in what might be called "good housekeeping" has been extremely scant, if not wholly neglected. In Public Health Service hospitals this constitutes an important part of the ward nurse's duty; and if the ward nurse has



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not had adequate training in this direction, the chief nurse must make up the deficiency and painstakingly see that she receives the proper instruction.

The care of the ward property in Government institutions is decidedly different from such care in most outside organizations. More records are required and the method of keeping them is possibly more exact. Here again the chief nurse must be alert to foresee any possible delinquencies. Many nurses at first are not very successful in obtaining from the ward attendants a due amount of service, and if this is the case the chief nurse must by counsel and admonishment fill in the breach.

In making assignments to the wards the various idiosyncrasies of the individual nurses and their reactions toward ward surgeons must be given consideration so that unnecessary friction may be avoided. At times this will call for the use of a good deal of judgment by the head of the nursing service.

The chief nurse should be thoroughly familiar with the correct method of keeping up the ward records assigned to the nurses, and she should consider it obligatory to inspect these documents from time to time to see that the work is being correctly performed.

An important function of the chief nurse is to instruct the nurses recently appointed and reporting for duty in regard to their work in the hospital.

Naturally the nurses will come to the chief nurse with problems which arise from time to time, especially difficulties which may develop between themselves and the patients. On such occasions the chief nurse should be able to give them advice seasoned by experience and take such action as will insure harmony and promote successful administration. Such minor matters can usually be handled by a good chief nurse without appeal to higher authority.

The chief nurse is in charge of the nurses' home and responsible for the conduct of all the female personnel residing therein. She will suggest such brief rules and regulations as she believes proper for the conduct of the home and present them to the officer in charge for his approval. She is also in charge of the dietitians and physiotherapy aides in all matters outside of their professional duties, and she is expected to exercise supervision over them accordingly.

At stations where there is no organized social service the chief nurse usually gives a certain amount of her time to work of this sort.

It will be appreciated from the preceding that a successful chief nurse in the Public Health Service has a much wider field of activity than merely that of supervising the professional work of the nurses under her.

Assistant Chief Nurse.—Assistant chief nurses are on duty in some of the hospitals. They may act as assistants to the chief nurse in large hospitals or be themselves acting chief nurses in smaller institutions, and their duties will vary in accordance with the circumstances above mentioned. This position is next in importance to a chief nurse, and authority and responsibility are given to the incumbent accordingly.

Promotions.—When opportunity offers, those staff nurses who show unusual ability in the performance of their work are promoted to the position of head nurse. The chief nurse usually indicates to the medical officer in charge the individuals she thinks most deserving of this increase. It is well, before making a definite recommendation, to make inquiry among the other physicians and ascertain whether they agree with the opinion of the chief nurse in regard to the capability of the individual in question. Appointments to head nurse are not made after any definite length of service, but most hospitals have a certain number of these positions and the quota is usually kept filled by promotion from the lower grades when vacancies occur. No nurse should be promoted to be a head nurse who has not the ability to get along well with her patients, to handle the ward attendants under her successfully, to keep her ward records correctly, especially the property return, and does not have satisfactory professional attainments.

Nursing Duty in General.—Staff nurses are usually rotated on the various wards, oftentimes at the end of each month. This permits of some change in occupation and divides the more arduous tasks.

It is customary for nurses to go on duty at 7 o'clock in the morning and to remain on until 7 o'clock in the evening, with four hours off. On Sundays and holidays a half day is allowed to all who can be spared, so that each nurse is assured of a half day every Sunday and on holidays.[3] All head and staff nurses take their turns at doing night duty, except possibly nurses assigned permanently to some special post, such as the operating room or out-patient office.

Relations with Patients and Staff.—At times the question of the relationship of nurses with patients in the institution will arise. It is needless to say that a nurse can not accept social attentions from a young man and at the same time exercise full disciplinary control over this individual when he is under her charge on the ward. The extending of harmless courtesies, such as gifts of candy or flowers, can scarcely interfere with the proper relationship between nurse and patient; but this is not true of accepting attentions, invitations, or presents which are tendered by young men only to those persons in whom they have more than a casual interest. It may seem difficult to say just where one situation stops and the other begins,

[3] An additional half day is also given during the week.

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and in fact it is impossible to do so in words; but every intelligent woman knows instinctively exactly where the line is drawn.

In civilian institutions certain restrictions are usually placed upon the companionship of nurses in training with the house physicians. In Public Health Service hospitals no restrictions in regard to the social relations of the nurses with any of the personnel are imposed. It is assumed, of course, that the nurses will exercise the usual discretion in confining their friendships to those who would ordinarily be considered their social equals, and it would seem unnecessary to add that visiting and the like in the wards during hours of duty is strictly forbidden.

LABORATORY

A pathological laboratory is, of course, an essential factor in every hospital. This department should be under the supervision of a medical officer, but the larger part of the work will be done by one or more technicians. Public Health Service laboratories usually carry out the following procedures:

Urinalysis.
Sputum examinations.
Wassermann tests.
Dark field examinations.
Blood counts.
Examination of blood smears.
Examination of feces.
Examination of stomach contents.
Blood chemistry.
Animal inoculations.
Identification of cultures
Making of vaccines.
Blood grouping.
Typing in pneumonia.

Tissue work may or may not be attempted, as much of this material is forwarded to the National Institute of Health (formerly the Hygienic Laboratory), at Washington, D. C.

The amount of routine laboratory work to be done on every patient is discussed under the heading of ward management and need not be taken up here.

DRUG DISPENSARY

The necessary drugs are usually dispensed and compounded either by a pharmacist on duty or a drug clerk on requisitions or prescriptions sent down from the wards.

Patients still believe fully in the efficacy of medicine, and it is good practice to see that therapeutic nihilism has not so invaded the staff as to cut down the use of drugs on the wards to the point where the patients believe that they are being neglected. An attractive pharmacy, with its long rows of glistening and well-kept stock bottles, is an asset to any hospital and serves to inspire the confidence of both patients and visitors who may observe the same. It is comforting for the sick to feel that there is an abundant supply of remedies available for any emergency which might arise.

X-RAY LABORATORY

The X-ray laboratory is, of course, an important part of the hospitals' scientific service, and the Public Health Service stations have very good equipment. This division also should be under the supervision of one of the medical officers, with a technician to make the exposures and develop the plates.

It is impossible to think of modern medicine without the facilities of a good X-ray laboratory, but experience has proved that frequently a great deal of unnecessary work is thrown on this department. Patients are often referred for a G. I. series when there is but little indication that such a procedure will be of any material value; and it should be remembered that X-ray plates are expensive and should be used only when they are actually required. There should be no false economy along this line; but there is a tendency on the part of some physicians to send patients to the X-ray department for exposures which are not required and for which there is no good indication.[4]

Deep X-ray therapy has proved its value in certain types of cases, but, unfortunately, it has by no means been as effective in internal carcinomas as was at first anticipated. It is, however, extremely valuable in terminal stages of many inoperable advanced cancers to alleviate pain, and it is very frequently indicated for this purpose. Especial skill and training are required to administer deep X-ray therapy successfully, and in most instances it will be more economical for the hospital to have this work done on the outside, as the apparatus itself is very expensive and requires considerable space for its proper installation. Treatment with the ordinary X ray for various conditions, as indicated, should be administered under the direct supervision of one of the members of the medical staff and not by a technician.

RADIUM

Radium emanations are decidedly beneficial in cancers of the skin, keloids, and certain other conditions. They have been rather disappointing in malignant growths of the internal organs.

The keeping of supply of radium is hardly justifiable in Public Health Service hospitals, and it will usually be more economical to send these cases for treatment to outside institutions or physicians who make a specialty of this form of therapeutics.

Proposals for both radium and deep X-ray treatment should be obtained whenever practicable, and authority obtained from the bureau for incurring the necessary expenditure.

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[4] Large films should not be used where a less expensive small film will serve the purpose.

SOCIAL SERVICE

Many of the larger and better organized hospitals in the great cities have installed a social-service department and find it indispensable.

The need of such a division in Public Health Service hospitals is more fully explained on page 96 under the general heading of "Ward management."

To this section will usually be assigned the following functions:

1. Answering routine inquiries from friends and relatives concerning the physical condition of patients.
2. Handling and distributing the patients' mail.
3. Assisting patients in financial affairs, such as cashing checks, making bank deposits, and the like.
4. Securing such things as may be needed from the outside, such as hosiery, clothing, and the like.
5. Assisting in preparing various claims for compensation and insurance; also in writing letters to friends and relatives.
6. Getting up the necessary data to accomplish the transfer of patients to other institutions, such as the Sailors' Snug Harbor, soldiers' homes, or State insane asylums.
7. Supervising various social entertainments and diversions, such as movies, amateur theatricals, etc.
8. Maintaining the library, reading, and recreation rooms.
9. Assisting the friends and relatives of dangerously ill patients in various ways, such as securing boarding houses, hotels, and the like.
10. Arranging for church services and funerals and calling ministers or priests to visit dangerously ill patients.
11. Assisting discharged patients in securing positions, to get back to their homes, and in other ways.
12. Getting philanthropic people and associations interested in the hospitals.

If this plan is followed, it will be noted that many of the contacts of the institution with outside sources, especially the friends and relatives of patients, are first made through the social service. It is, therefore, very important that the personnel of this division be carefully selected to assure that they have the necessary qualifications.

Work of this sort can be satisfactorily performed only by those who have the interest of the patients truly at heart and are really desirous of giving service.

OCCUPATIONAL THERAPY

In those hospitals where a large number of chronic patients are cared for, occupational therapy would apparently find a very important field of usefulness. However, in Public Health Service institu-

tions, with the exception of those devoted to special diseases, such as the tuberculosis sanitarium at Fort Stanton, N. Mex., and the leprosarium at Carville, La., the results obtained from occupational therapy have been rather disappointing, so much so that most of the officers in charge have closed up such departments, although a few of the stations may still be furnishing a certain amount of help or supervision to those patients who desire to keep themselves occupied. In fact, for many years a few of the sailors in marine hospitals have worked at various forms of rugs, embroidery, curios, carvings, and the like, for pleasure or profit. The man who really wants to while away the time by keeping his hands employed will usually find some means of doing this without the establishment of a special division with tools, workshops, and all sorts of expensive and fancy materials and especially trained aides to instruct and encourage him in his work. The writer has always believed that it was beneficial for the men to make little articles when they really enjoyed doing it, but can see no use in spending a great deal of time and effort in trying to get individuals who prefer to do nothing, to construct useless objects.

There are certain types of occupational therapy which either require considerable apparatus or make a great deal of dirt and confusion on the ward, and for this reason they are rather impracticable and undesirable. The knitting of scarfs and skull caps on frames, the tying and knotting of rugs, making beaded, knit, and tied bags, and belts and fishing nets are all occupations requiring but little apparatus and are practicable in the hospital without causing a great deal of disorder or untidyness.

The social worker, if one is available, or the nurses can help patients who are particularly interested in clean work of the type above named, and a moderate amount can very easily be carried on in any institution by those patients who really want to amuse themselves in this way.

Woodwork, painting, metal work, and the like demand a great many tools and a special place and always result in a certain amount of messiness if attempted by the bedside.

CHIEF CLERK

The chief clerk has general supervision, under the direction of the medical officer in charge, of—

All the correspondence.
Regular reports.
Cost accounting.
Preparation of financial statements.
Making up of vouchers and pay rolls.

Nominations and resignations.
The personnel files.
Cost accounting records.
Getting out station memoranda and the like.

The "paper" work of the station, to a large extent, is under the direct supervision of the chief clerk; and in view of the importance of all Government documents, this position requires a man of experience and training.

REGISTRAR

The registrar is intrusted with the keeping up of the professional files of the institution; that is—

The register of patients.
Filing of the completed clinical records.
Making up of reports pertaining to patients.

This officer is also usually intrusted with the care of the money, valuables, and other effects of the patients and does the clerical work when a patient is admitted by the admitting officer of the medical staff. Other duties are assigned to the registrar in accordance with the needs of the particular station.

MATÉRIEL OFFICER

The matériel officer has many important duties which will be enumerated in part.

Maintenance of buildings and grounds.—Under this heading comes the supervision of the heating plant, elevators, electric-lighting system, refrigeration plant, plumbing, and various forms of mechanical equipment. The station engineer reports directly to the matériel officer, as does the carpenter, electrician, painter, and other mechanics. Minor repairs or alterations to various parts of the building are constantly needed and handled by this officer. The care of the grounds includes the disposal of waste—that is, garbage, ashes, and trash—which is an important matter.

Supervision of laundry, motor transportation, and pharmacy.—A certain amount of technical training and experience is required properly to handle these various activities and the employees connected therewith.

Property accountability.—Under this heading come many details such as—

The care of warehouses and the preservation of the property stored therein.
The issuing of supplies to the various departments of the hospital.
The inspection and checking of supplies and items of equipment received from contractors.
The issuing of purchase orders.

The keeping of proper records of the property of the station as a whole, and lists of the articles issued to various wards or departments.

The getting out of requisitions.

CHIEF DIETITIAN

The chief dietitian is in charge of the entire culinary department. She selects the menus and orders and inspects the necessary food. All the kitchens, dining rooms, and food storehouses and employees attached thereto are under the direction of the chief dietitian and her assistants. A more detailed account of the duties of the dietitians will be found in a special chapter on "Dietetics."

SUMMARY

It will be observed that the operation of the station, other than as regards purely professional matters, is divided into four main divisions, and placed under suitable officers, who bear the following designations:

Chief clerk.
Registrar.
Matériel officer.
Chief dietitian.

As described in the foregoing, these administrative functions are distributed among the above-named officials, and in a large hospital each of them will require one or more stenographers or clerks to assist in the various details of their office work.

However, in a smaller institution it is customary to combine some of these positions. For example, the chief clerk may also act as registrar and personnel officer, and in the very small hospitals a pharmacist may act as chief clerk, registrar, and matériel officer. It is not a very difficult task for one individual to supervise these various activities, provided he has sufficient assistance. In hospitals of the ordinary size, however, it is rather important that there be at least two well-trained men to cover the administrative work, one to act as chief clerk and registrar and the other as matériel officer.

As the upkeep of the buildings and grounds, motor transportation, and laundry come under the matériel officer, he should not be tied down to his desk so closely that he can not spend at least half the day moving around different parts of the institution and keeping in direct contact with the employees who have been assigned to him and who may be working at widely separated points on the reservation.

CHAPTER III

GENERAL MANAGEMENT OF THE MEDICAL AND SURGICAL WARDS

ADMINISTRATIVE HOSPITAL PRACTICE

Admissions.—The need of providing for patients to be passed promptly through the admitting office is discussed in another place. The patient will be conducted to the ward by an attendant and turned over to the head nurse and not be allowed to wander through the buildings unaccompanied looking for the place to which he has been assigned.

The pulse and temperature should be taken and a temperature chart and progress sheet opened. After this has been done, the ward surgeon should be immediately notified.

Preliminary Examinations.—It is very important that the medical officer examine all newcomers as soon as practicable, and that a tentative diagnosis be made so that appropriate measures may be inaugurated at once.

The physical condition on admission should be fully recorded on the history chart at the time of making the first visit.

The sick man may now be given the necessary instructions in regard to diet, rest, and personal hygiene.

Start Medicines Promptly.—Most people believe that medicine is essential in producing a cure in almost any condition; hence it is wise to prescribe for immediate administration some drug, even though it be a simple tonic, for the patient will naturally entertain the idea that nothing is being accomplished toward producing a cure until he has actually taken some sort of a dose by the mouth. Only too frequently the complaint has been made by patients, even of a high order of intelligence, that they had remained in a hospital for a number of days before anything was done for them. It may be inferred in such cases that during the preliminary examinations, laboratory procedures, etc., no medical treatment had been instituted. Sick people may be duly impressed with the importance of the various methods of studying their cases, but deep in their hearts they all think that drugs are the agents which produce recovery, and that any period elapsing before medicine is given is to a certain extent so much wasted time. *Therefore, by all means, have the patient examined promptly and some kind of*

treatment started without delay, even though the diagnosis has not been definitely determined.

It has been noted that very frequently seamen have been permitted to stand around a ward for a considerable period of time waiting for the nurse to assign them to a bed. This should not occur. The patient should be shown at once where he is to sleep in order that he may have some place to call his own and in which to await the coming of the doctor.

Strangers to the institution will be profoundly impressed by the method in which they are handled when they first reach the ward, and the rules governing this subject should be sufficiently specific to insure satisfactory service. It should always be remembered that the newcomers may be entirely unfamiliar with hospital procedure and perhaps somewhat nervous and apprehensive as to what is about to happen. Special consideration should therefore be shown them at this time.

Promptness in Attending to Patients' General Needs.—The writer has often noticed that, after having suggested a change in treatment or the use of a new appliance, several days elapsed before these instructions were put in force—a delay entirely unwarranted, and disappointing to the patient. This seems to be a more or less common fault of all institutions and is apparently due at times to thoughtlessness and a certain amount of indifference. The delinquencies range from the supplying of some minor comfort, such as a reading lamp, to more important things, like the beginning of physiotherapy treatment or the application of a new splint.

All the personnel should be impressed with the necessity of attending to these matters with promptness. Even if the ward surgeon is busy, the necessary instructions can usually be issued to other persons so that the amount of time which may be required before a special appliance can be procured or a prescription filled is cut down to a minimum.

The same criticism often applies to the making of diagnoses and starting definite treatment toward recovery. Some of the obscure cases are apparently allowed to drift along for several weeks without any definite plan of action being adopted. It is possible, in practically all cases, within 48 hours after admission to determine what will be necessary to make a definite diagnosis. These measures should be started immediately so that all necessary data may be available as soon as possible.

Sometimes letters must be written to other institutions asking for information or relatives interrogated concerning previous conduct. Such inquiries should be sent out without delay; and as time will be required to obtain replies, preference should be given to clearing up

matters of this sort over laboratory examinations which may be made during the interval.

Ambulance Surgeons.—The question as to the necessity of sending a physician with the ambulance is an important one, but not always easy to decide. In some cities most of the civilian ambulance work is done by police ambulances which carry no surgeon at any time; in others, where the hospitals send out their own vehicles, it is an invariable rule to have an interne accompany them.

In making calls to the water front to bring men with broken limbs from on board vessels the proper transportation of the patient from his bunk on the ship to the ambulance is sometimes a difficult matter, and often requires skilled oversight. Where men are seriously ill, in shock, or much exhausted, it is certainly wise to have a physician with them on their trip to the hospital. In a certain sense, the institution assumes the responsibility for the patient the moment he is placed in the ambulance, and a death en route to the hospital, unless a doctor is with the patient, is likely to result in much unfavorable criticism.

Obviously, no interne is required where the patient is but slightly injured or suffering from a minor illness. The great difficulty arises, however, in determining the nature of the case when the ambulance call is received, as very frequently the person calling knows very little about the real condition of the patient. On the whole, it seems better to err on the side of conservatism rather than to take chances of not having a physician on the ambulance when his services might be needed.

Stretcher Cases.—Men brought to the ward on stretchers should, of course, receive special attention and the ward surgeon or officer of the day should be notified immediately. Pending his arrival, the pulse and temperature of the patient may be taken in order to save time. If the patient is unconscious, the search of his clothing for any valuables becomes of importance, and this should always be borne in mind. Money or jewelry taken up in this way should be promptly sent to the chief clerk for deposit in the station safe and a proper receipt obtained for the owner.

Baths.—It is customary to require ambulatory cases to take either a shower or a tub bath upon admission. When men are admitted with fever, much debilitated, or evidently quite sick, the administration of the bath should always be deferred until a decision on the method has been rendered by competent medical authority.

It is the rule ordinarily that all bed patients receive a sponge bath every morning. Convalescents, able to be up and about, are usually able to attend to their own needs in this respect, and the matter is left largely to their own discretion. It is always a safe precaution,

however, to keep a record as to the bathing even of ambulatory patients, and a bath book is useful for this purpose. Occasionally a charge will be made against an institution that a patient was permitted to go for several weeks without being given this service, and the record will be found extremely useful either in refuting these charges or preventing such an occurrence from happening unwittingly if the individual is personally disinclined to ablutions. This neglect of cleanliness is often noted in men who show the symptoms of beginning senile dementia or other forms of mental deterioration.

Issue of Hospital Clothing.—Pajamas, bath robes, and hospital shirts are usually provided for those individuals who do not have these garments. A receipt should be taken for all articles thus lent to insure their return.

When the patients are ready to leave the hospital the ward surgeon makes out a request for discharge, which is to be presented at the main office before receiving the formal document. This request for discharge is held by the nurse until all property furnished to the patient has been satisfactorily accounted for. If all the items can not be found, a signed statement covering the loss is secured.

A sample form to be used in making out the list of clothing issued, the receipt therefor, etc., would read as follows:

PATIENT'S RECEIPT FOR TOWELS, ETC.

_____
(Date)

UNITED STATES MARINE HOSPITAL NO. 1,
Baltimore, Md.

Received from the ward surgeon of ward ——, the articles listed below, which are lent me for personal use while a patient of his ward, and are to be returned to him upon my discharge from the hospital or transfer to some other ward.

Article	*No.*	*Article*	*No.*
Slippers, pair	------	Bath robe	------
Hand towels	------	Bath towels	------
Pajamas, suits	------	Underwear	------
Tumbler	------	Soap dish	------

_____
(Patient)

_____
(Date)

Received from the above-named patient the articles listed above, with the following exceptions:

_____
(Nurse)

_____
(Date)

I hereby certify that the articles listed under exceptions in the nurse's receipt above, and which were lent me for my personal use, have been lost, mislaid, or stolen and that a careful search among my personal effects has failed to reveal same.

_____
(Patient)

The chief clerk should require all patients to present this receipt before allowing them to get their baggage out of the baggage room.

Care of Patients' Bags and Baggage.—As the patient is not allowed to take his larger pieces of baggage into the ward, provisions must be made suitably to safeguard it. A special room with appropriate shelving should be fitted up for this purpose. This space should be in charge of one employee, who is held responsible for this duty. Especial caution should be exercised that all baggage is properly marked when the patient is admitted. The patient should be given a duplicate tag and great care should be exercised that no one but the rightful owner is given access to baggage.

A correct list of all articles in the room should be maintained at all times, and a receipt *taken for any articles removed.* There is no method whereby a patient may be reimbursed for lost baggage while in the custody of the Government; hence every precaution should be taken to prevent any errors in handling the property of patients.

If overcoats or suits of clothing are hung up in the baggage room, the caretaker should be on his guard to see that they do not become infested with moths, as the owners will expect the hospital to make good should such infestation occur and damage result.

Complications which may arise in the baggage room are the changing of tags, the loss of articles from bags, and the disappearance of baggage entirely; hence the system of safeguarding and checking up on baggage should be reviewed by the medical officer in charge from time to time.

Visitors.—The time for visiting in the wards is prescribed by the regulations. The officer in charge may extend these hours, however, whenever it is deemed desirable. In practice one must be rather liberal in this respect, but the matter of visiting should be kept under close observation. No visitors should be admitted after the regular hours without a proper pass, and the nurse should see that all outsiders are provided with the necessary authority before admitting them to the ward.

When a patient is dangerously ill or in a dying condition, the visiting privileges are always extended within all reasonable bounds to the family and close friends. Ministers or priests coming to see the sick should be admitted at any time of the day or night.

The privilege of having visitors is very much appreciated by the patient and his friends, but too many visitors in the ward is likely to result in considerable noise and confusion, which may be detrimental to certain of the occupants.

In the matter of handling visitors, then, the hospital has an opportunity of making friends or incurring considerable criticism. The privilege should be extended as fully as is consistent with good management, and the head nurse on the ward should be held responsible for seeing that the policy of the station in this respect is being carried out;

but visitors should at all times be treated with a great deal of tact and consideration.

Peddlers and Canvassers.—Permission will be requested from time to time by agents of various sorts, canvassers, etc., who desire to visit the wards for the purpose of securing business from the patients. These requests should at all times be denied. It seems needless to state that life-insurance men should not be admitted to solicit business from the personnel during business hours.

Lawyers' Agents.—Complaints will be received occasionally that runners for certain lawyers are visiting the wards and soliciting damage suits for their employers. The same rule should be applied in such cases as obtains with all other solicitors; that is, no one should be permitted to go through the hospital trying to secure business of any sort. Hence, as soon as it is learned that an individual has endeavored to solicit business in this way he should not again be given the freedom of the ward.

The greatest difficulty, however, in attempting to control this evil is the fact that the agents may not be known or that a lawyer or his clerk having legitimate business in the ward with a patient may seize the opportunity to secure other cases while apparently engaged in innocent conversation with the men.

It should be remembered in this connection that any seaman in the institution has a perfect right to send for any lawyer whom he may desire to consult, and no attempt should be made to interfere with him in the exercise of this privilege.

Canteen.—The convalescent patients in service hospitals require a certain amount of the creature comforts of life. A canteen handling cigars, tobaccos, cigarettes, candies, and soft drinks may be desirable, especially if the institution is located at some distance from the shops. However, if stores are near the hospital it is usually the better plan not to have a canteen there.

Patients will occasionally request permission to be allowed to sell cigars and cigarettes to the other inmates. Experience has shown that if they are permitted to start this trade in a small way it usually grows very much beyond the original expectations. Candy, fruit, bottled soda, pies, and cakes will gradually be added, sometimes making considerable mess and annoyance in the ward and making the whole project a good deal of a problem to all in authority. This should be borne in mind when these privileges are sought, and it is usually wiser not to allow patients to sell anything except tobacco.

If a canteen is opened, it will be more satisfactory to have it handled by some one not connected in any way with the hospital, if this is practicable.

The seamen at times, especially those who are bedfast, will require the services of a barber, and usually another patient will be found who

has sufficient skill in the trade to attend to their needs. It may be advantageous, however, to authorize some outside barber to visit the institution at stated periods in order to wait upon those who desire his services.

A good deal of pressing and cleaning of clothes seems to be required by the convalescents, and applications will be received from various tailors for permission to come to the station and solicit this business. The handling of the project involves the collection of the clothes in the wards and their delivery to the proper owners when the work is completed. If a reliable and trusty man is given this privilege it may be a great convenience to the patients and also to certain members of the personnel. If the business is of considerable volume, the medical officer should not give away a valuable privilege for trivial or personal reasons. In such a case the better plan is to have several shops submit a schedule of prices and to award the concession to the one who agrees to furnish the service at the lowest cost to the patrons. In deciding on what course to adopt, the welfare of the patients alone should be considered, and it should be understood by all that no one is compelled to employ the appointed person unless he desires to do so.

Distribution of Patients' Mail.—It is important that letters for patients be carefully handled, or sooner or later complaint will be made that a missive containing money has disappeared, and it will be difficult to decide who is responsible for its loss.

The plan of placing the mail on the nurse's desk and allowing the patients to come there and help themselves is by no means a good one. Some responsible person should be deputized to deliver the mail to the wards, and the nurse should in person deliver it to the patient to whom it is addressed. It has been noted that some hospital employees appear to be rather careless in handling other persons' mail.

Changing Linen.—It is obvious that the linen in the case of bed patients should be changed as often as necessary, usually at least once a day.

The practice of renewing the linen every day for ambulatory cases is not at all necessary and is very wasteful, as the additional washing entailed soon destroys these textile fabrics, and laundering is at all times an expensive process.

In determining how often the linen should be changed for the men who are up and about, common sense and experience must be the guide. However, no matter what rule is adopted, it must be understood by the nurses at all times that if for any reason the sheets or pillow cases become accidentally soiled, they must be replaced at once, regardless of the routine practice.

Quiet in the Wards.—All ward patients are required to be in bed at a certain hour and the lights extinguished. This is for the common good of all. It is, of course, understood that quiet and order

must be maintained at all times. Frequently requests are made for permission to put a phonograph, radio, or other musical instrument in the ward. The use of such musical instruments may be permitted at certain hours if no one is disturbed thereby, but these privileges must always be carefully supervised or they will be abused.

Many persons complain that they are greatly disturbed by unnecessary noises in hospitals, especially when first admitted. This complaint is often well founded, and at times the hospital personnel undoubtedly become careless and do not exercise sufficient caution to avoid disturbing those who are sleeping.

The janitor force in the morning hours may be important offenders in this respect. Signs invoking quiet and silence might well be displayed at night and in the early morning hours in various parts of the institution.

Baggage.—Patients are not permitted to take their grips and valises into the wards. There are several reasons why this is inadvisable: These containers give a ward a very unsightly appearance; they may be the means of introducing vermin; and they afford a very convenient means of removing Government property. Each patient, however, should be provided with a bedside locker, in which to keep certain necessary toilet articles and an ordinary locker in which to hang his outer clothing at night or when not in use.

Clothing.—The question often arises as to whether or not patients should be put into pajamas and bath robes in order to prevent them from leaving the reservation without passes and for various other reasons. Such a plan has its advantages and disadvantages. If the civilian clothing is taken away, the patient has to go to the dining room and about the grounds in bath robe and pajamas, which are unsightly and sometimes embarrassing to visitors and others who may be about the institution; it also adds considerably to the expense of the hospital laundering.

A better plan seems to be to let the patients have their clothing when they are able to be up and about and to issue a positive rule that men in bath robes and pajamas shall not leave the ward or its annexes while thus attired.

Convalescent Suits.—In some of the hospitals the patients who are able to be out of bed are furnished with convalescent suits by the institution. These suits are very convenient where the patient has not sufficient clothing or where his clothing is so worn or soiled as to be unfit for use in the ward.

The convalescent suit, however, is usually unattractive in appearance, and as they are all alike the patient gets an institutional look, which is rather undesirable. The expense of maintenance of these suits is, of course, a considerable item.

Assisting in Ward Work.—The regulations permit of patients' being required to perform light duty on the ward not incompatible with their speedy recovery. Many of the men are very glad to help around in various ways, especially to wait on each other by carrying trays to bed patients, or water, and performing similar personal services. Light occupation serves as a mental diversion, relieves the tedium of hospital residence, and is really a valuable aid toward recovery.

On the other hand, it has happened that patients have been imposed upon by the ward personnel and required to perform the attendants' work while the employees sit in idleness. Both tact and discretion are abundantly needed in this particular phase of ward management. The patient should usually be asked to help, rarely ordered, or the nurse may call for volunteers for the performance of certain duties. Orderlies should never be permitted to issue instructions to patients. When properly approached on this subject the convalescents usually will willingly assist in serving food, in cleaning up after meals, even in wiping dishes and in sweeping floors; they also apparently enjoy cutting up gauze, helping in the library, and doing certain other kinds of work such as decorating the wards at Christmas and the like. They never appear to be willing to cut or rake lawns, although this sort of out-of-door exercise might be highly beneficial; for some reason they always seem to object to it, and in such a case it is not wise to insist. They also usually dislike scrubbing floors or cleaning up bathrooms, and here again it seems that this duty is more properly performed by the attendants on the ward. The whole question of work by patients should be given occasional scrutiny on the part of the officer in charge, and it seems better to require too little than to attempt to secure too much assistance in this way.

Ventilating and Heating the Wards.—Most patients are lightly clad. It is therefore necessary that the wards be kept at an equable temperature. Oftentimes the metabolic functions of sick people are depressed and they require higher temperatures for comfort. A nurse who is moving about may be very comfortable in a temperature which is entirely too cool for patients who are at rest; hence the thermometer should always be the guide rather than the feelings of the attendants.

Thirty years ago a great deal was written and said about the ventilation of hospital wards. However, it has been learned that ordinarily for all practical purposes sufficient fresh air will be secured in winter through the cracks and crevices around the windows and doorways, and that artificial systems of aeration are not necessary in wards of adequate size, provided the natural ventilation is supplemented by intelligent opening of windows as may be required.

The temperature of the ward should be maintained at 70°, and when it gets above that point the heat should be turned off. Unfortunately, in hospital practice the usual method of cooling a room or ward when the temperature gets too high is to open a window, as it is easier to do that than to reach down and turn the valve of a steam radiator. It is extremely common to come into some part of the institution and find several windows open and all the steam radiators on, which means that a great deal of coal is being wasted in the boiler room. This point will require particular care at the onset of cold weather and throughout the entire winter season.

Special instructions will usually have to be issued every fall to nurses, ward surgeons, and the chief nurse, and they should all be held responsible for seeing that the *windows are not open at the same time that the steam is left turned on*, except possibly in bathrooms or toilets, for legitimate ventilation.

A practice which can not be too strongly condemned is to attempt to provide open-air treatment for patients who are housed in heated general wards. Frequently, even in winter, pneumonia cases are pushed up against an open window and a strong stream of cold air is allowed to blow upon the bed. Not only is the life of the patient himself endangered by this draft when he is perspiring, as is often the case, but the ward is made practically noninhabitable for its other occupants. The impropriety of such a procedure is so obvious that it would seem unnecessary to mention it here if it were not for the fact that it is often observed when one is making rounds through institutions.

The idea also seems to be extremely prevalent among nurses that when cases of measles, mumps, and other communicable diseases are isolated in special rooms the infection is somehow inhibited if the temperature of the room is kept at a low point. Accordingly, they keep the windows up in these apartments so that the patients are far from comfortable and are frequently subjected to drafts. The doctrine of fresh air has been promulgated to the point where apparently many hospital attendants seem to think that chilling the bacteria a few degrees will kill them.

At night the temperature of the ward may be allowed to drop somewhat by turning off the radiators and opening windows, if necessary. It is not, however, usually practicable to cool down wards at night as much as sleeping rooms in private dwellings, because certain of the patients will have to be out of bed sometimes and they should not be moving around in too cold an atmosphere; other patients will require the attention of nurses and orderlies, and these employees can not very well perform their duties if their hands and bodies are numbed by extreme cold.

Humidity.—Usually the air in all artificially heated spaces quickly becomes dry and the humidity much lowered. This is an undesirable state of affairs in human habitations, but as yet no economical practicable method has been devised to overcome it. The placing of various shaped containers on or alongside of radiators filled with water results in the adding of a little moisture to the air, but only an insignificant amount when checked up with what is really demanded. Such devices are better than nothing at all; but the installation of a can of water in or behind each radiator should not be considered as a satisfactory method of bringing the humidity of a steam-heated ward up to the proper point.

Sick Call.—It is customary to make the morning sick call at 9 o'clock and the afternoon call at an hour designated by the officer in charge. All patients are required to be present at the morning sick call either in bed or at the bedside. Those patients who are convalescent may be excused by the ward surgeon from the afternoon visit when it is deemed advisable.

The temperature charts of all patients on the ward should be brought up to date before the time of making the sick call, and the medical officer should in every instance carefully scrutinize these charts either before starting the rounds or at the time when he sees each individual patient. Too much stress can not be laid upon this precaution, as sudden changes in temperature are very frequently warnings of impending disaster. The ward surgeon who fails to take advantage of these danger signals, when available, will certainly sooner or later rue his carelessness in this respect.

While the call is being made, quiet and order should be maintained in the wards. It is not necessary nor advisable to have patients come to their feet and salute the visiting physician, but the occupants of the ward should be taught that this is a time when silence must prevail. The call should be executed without any unnecessary delay, in order to relieve the patients from the restraint at the earliest possible moment.

The medical officer should pause at each bed long enough to satisfy himself as to the condition of the patient, but physical examinations and other matters requiring some time should be deferred until the call is complete, and the physician should make notes of those cases which he desires to investigate further.

It is usually convenient to have the nurse or attendant carry along the holders containing the temperature chart, and the ward surgeon's and nurse's progress sheets at the time the sick call is being made, so that they may be consulted at the time when the patient is being interrogated. If an interne is on duty in the ward, he will, of course, accompany the ward surgeon on his rounds.

At the completion of the call, the diet slips and other papers should be signed, the necessary notes made on the charts, and prescriptions written; and, finally, any dressings, detailed examinations, or writing of histories may be undertaken.

Attitude of Nurses toward Patients.—The control of patients on the ward is for the most part a comparatively easy matter if the nurse is possessed of ordinary discretion. A little tact and firmness combined with a reasonable amount of common sense will almost always keep things running fairly smoothly. Certain disorders must be checked instantly; at other times it may be the part of wisdom not to be too punctilious about small matters. It will be noted in this connection that most nurses rarely appear to have any difficulties in this respect, whereas others will repeatedly come to the office with complaints about this or that patient. Such individuals are usually unsuited for hospital work; and if they can not learn to get along without friction they should be advised to resign and seek some other field of endeavor.

All nurses should clearly understand that Public Health Service beneficiaries are not charity cases, but are on the basis of pay patients in private hospitals, that it is the duty of the nurse to get along with the patients, and that they should maintain a courteous, kindly, and sympathetic attitude toward them at all times. Patients may be irritable and disagreeable, but this is more or less the privilege of the sick and does not justify any retaliation on the part of any of the personnel.

At times it will be strongly suspected that a patient is malingering and really has nothing wrong with him. Under such circumstances a nurse or attendant should never in any way indicate to the person concerned that this is believed to be the case or refer to a patient in his presence or in the presence of others as a "gold-bricker." Employees may very properly report their observations in such cases to the officer in charge of the ward, who will be guided accordingly, but until a patient has been formally discharged he should always be considered as a suitable subject for treatment and receive all due consideration. *It will be advantageous to spend considerable time and energy in impressing upon all the ward personnel the above facts;* that is, *their correct relationship toward the beneficiaries* of the Public Health Service.

It is obvious that, if a nurse is expected to maintain discipline in the ward, it is necessary to see that she is treated with due respect by the patients at all times and to insist that her proper orders be promptly executed. The use of profane or obscene language in the nurse's presence should never be tolerated, and repetition of the same is sufficient grounds for strict disciplinary measures in all cases, provided the patient is mentally responsible, which is always a matter to be given careful consideration.

In the issuing of orders, nurses should realize that it is the height of folly ever to give a command which can not be enforced; for example, walking into the middle of a ward and announcing in a loud voice that "The patient who left his pajamas in the bathroom shall go and get the same and place them in the soiled linen locker." Obviously such a procedure requires that a person shall admit guilt and then receive punishment for the offense, which is asking a little too much of human nature.

Nurses should not get into arguments with patients. When difficulties of this nature arise, in which there may be doubt as to the proper course of action, the patient should be informed that the matter will be referred to the ward surgeon for a decision. However, all patients should be given very clearly to understand that the nurses' orders are to be obeyed promptly and without question, in the absence of higher authority, but that they have the right to appeal later to the ward surgeon if it seems desirable.

Ward Discipline.—The head nurse is in charge of the ward at all times in the absence of the medical officer, and her instructions and orders are to be respected accordingly. The orderlies are directly under the supervision of the head nurse, and as a usual thing it is advisable for the ward surgeon to give his instructions to them through her rather than directly.

As the nurse is on the ward practically continuously, the maintenance of discipline thereon will fall chiefly upon her shoulders. Under this subject various headings suggest themselves:

Smoking.—Sailors are for the most part inveterate users of tobacco. Those patients who are suffering from injuries, especially fractures, which require prolonged treatment, will naturally desire to smoke, and the tobacco has a sedative effect, assisting to overcome the natural restlessness which makes it difficult to maintain fixation or quiet of the injured member. It is therefore highly desirable to provide a smoking room for each ward whenever this is practicable. Those patients who can not get out of bed to go to the smoking room are usually given special permission to smoke in the ward, and it is a great help to those administering the discipline of the institution if the beds of patients who have been granted this special privilege are marked in an easily distinguishable manner, such as the attachment of a red tag to the footboard. This will enable all concerned to know who has been granted permission to smoke in the ward and who has not. If it is found necessary, ward smoking may be restricted to certain definite hours.

All patients who are able to go to the smoking room should be required to do so. The enforcement of the smoking regulations has always been a difficult matter, especially at night, at which time the patients are very likely to smoke in bed and to throw their matches

on the floor, under beds of other patients, or elsewhere, sometimes creating a considerable fire hazard; but it seems desirable to permit a certain class of Public Health Service patients to use tobacco while under treatment. However, good judgment in regard to drawing up rules and regulations concerning the same must be exercised.

Gambling.—Gambling of all sorts should be prohibited. Experience has shown that if patients are permitted to play for any considerable amount sooner or later quarrels and fights will start, creating a very undesirable state of affairs. It is obviously impossible absolutely to prevent men from playing for stakes of some sort if they are determined to do so, but the rules should at least prohibit the playing with money or chips on the table or in sight; and if such rules are carried out faithfully, no trouble will be experienced with any small bets which the patients can make with the aid of marking on paper or the like.

Disturbances in the ward.—When a disturbance occurs in the ward, the nurse should correct it immediately. If ordinary admonition does not serve, the officer of the day should be summoned, as very frequently a man is required in case the patient is intoxicated or beyond the state of reason. Medical officers will sometimes be somewhat puzzled to know how to handle a drunken man who is creating a disturbance and who refuses to carry out instructions. Usually the best plan is to notify the local police and have the individual locked up for the night.

Wards not to be left without nurses.—It has been noted that in some hospitals it is the custom for practically all the nurses to go to the dining room at the same time, leaving the wards in charge of orderlies for this period. This practice seems to be unwise. The nurses should eat in shifts so as to make it possible for a sufficient number to be on the wards at all times to cover emergencies.

Relations with Local Police Authorities.—Ordinarily the marine hospitals are located on Government reservations on which the State has no police power. However, this depends on the exact terms by which the land was ceded to the Government; in certain cases the State has reserved the right to serve summonses and civil processes on the premises. Officers in charge of stations should be informed on this point.

It is usually the custom for the local police to assist in maintaining order on the reservation whenever they are requested to do so regardless of any technical points involved. Reciprocally, the officer in charge should always grant civilian officers the privilege of making an arrest on the station when they so desire, if they have a warrant and request permission in the proper manner. It is always best to maintain cordial relations with the city authorities, helping them in

every possible way, as their services may be needed from time to time.

If the local police refuse to come on a Government reservation when requested to remove a drunken or unruly patient, the United States marshal may be called upon. At times it may be advisable to have one or more station employees appointed as deputy sheriffs in order that they may make an arrest without delay when necessary to maintain order and discipline in the hospital. Such deputies are also useful in apprehending trespassers on the grounds.

Discharging Patients for Disciplinary Reasons.—Medical and surgical treatment is provided for the beneficiaries of the Public Health Service by the Government. The privilege carries with it, therefore, a very considerable monetary value, and no man should be deprived of rights of this sort without due and sufficient reason, just as his property should not be taken from him without proper procedure in law.

Patients committing minor breaches of discipline should be admonished by the ward surgeon and the fact should be entered on their clinical records. If the offense is repeated, the patient should be warned that further violations will result in a disciplinary board being requested in his case. Where the offense is sufficiently grave to require such action, a disciplinary board of two medical officers will be designated by the officer in charge to investigate the charges and make report on the same. The report of the board, whatever its nature, should be carefully reviewed by the officer in charge and approved or disapproved by him. Occasionally it will be found that disciplinary boards make recommendations which are not justified by the evidence shown in the report, or that the penalty may be out of proportion to the offense charged. Care should be taken that the accusations and the evidence concerned in the same be set forth in such a manner as to warrant whatever action is adopted so that if the case is at any time reviewed by impartial authority the justice of the action taken will be apparent to all.

Experience has taught that most disciplinary offenses in Public Health Service hospitals consist of absence without leave, overstaying leave, or coming back to the ward in an intoxicated condition and creating more or less disturbance about the institution. Almost always these offenses are committed by convalescent patients who are on the high road to recovery. Very frequently it will be practicable simply to change the status of the individual to that of an outpatient and not make any formal disciplinary charges against him. This confirms the opinion that the retention of patients who are up and about for a longer period than is actually necessary is not advantageous, as the ordinary rules become somewhat irksome to these

individuals, and they are much more likely to commit disciplinary offenses than those who are acutely ill.

When it is necessary to discharge a patient for disciplinary reasons it is a good plan to call him into the office and explain that he has virtually discharged himself, that his conduct was in his own hands and that when he committed breaches of discipline of sufficient importance he himself automatically severed his connection with the institution, much to the regret of all those who were endeavoring to keep him in the hospital and complete his cure. Some such attitude is always advisable, and many patients leave without any feeling of ill will after the matter has been put to them in this light.

No rule in the Public Health Service exists as to the eligibility for readmission of the patient who has been discharged for disciplinary grounds. Where the offense has been very serious and the patient applies after a very brief interval for readmission to the same hospital, the officer in charge should use his judgment about readmitting him. If a suitable interval has elapsed and the patient expresses regret for his act and makes a promise of correct conduct in the future, it is very frequently wise to readmit him and give him a second trial, at least if he still requires hospital treatment.

Various views in regard to the proper action to take when patients appear at the hospital while intoxicated are held by the different officers of the service, but it is a safe rule that anyone who returns in this condition and creates a disturbance in the ward is a proper subject for disciplinary procedures. However, the mere odor of liquor on the breath, if a man behaves himself, can scarcely justify his discharge if he requires further treatment for his proper recovery.

In handling minor breaches of discipline officers should at all times be tolerant and broad minded. However, in any institution where the sick are being cared for good order and firm control of the patients are always necessary. Any action which interferes with the comfort, security, or prompt recovery of the other patients should be much more severely dealt with than minor delinquencies injuring only the individual concerned.

Complaints.—The officer in charge should always receive any complaints in an interested and sympathetic attitude. Almost always some grounds for the report will be found to exist, although the facts may be much garbled. He should never, however, express any opinion on the matter until both sides have been investigated. The complainer should be assured that his story will be promptly investigated and suitable action taken when all the facts have been ascertained. If the matter is of sufficient seriousness, he should be asked to put his statement in writing, and he should be given distinctly to understand that if anything is really wrong he is conferring a favor on the institution by bringing up the matter for correction.

As Public Health Service patients do not come to the officer in charge unless there is a pretty good reason for their doing so, and although they may exaggerate the occurrence reported, nevertheless it is the part of wisdom to look into such complaints very carefully. This should be done, however, in a private and unobtrusive manner.

It is well to let all the personnel understand very definitely that the Public Health Service expects them so to conduct themselves that accusations will not be made concerning their professional relations with the patients. If a sick man wants the medical officer to come and see him, or the nurse to give him some minor attention, and he becomes more or less persistent, it should be clearly understood that he is to get what he wants rather than that the time of the medical officer in charge should be taken up with investigating complaints as to the insufficiency of his treatment. To make an unnecessary visit now and then to a ward or give some extra attention to a patient is very much simpler to all concerned than it is to hold a board of inquiry concerning alleged neglect. Physicians and nurses are paid for their services while they are on duty; hence calls from the patients should be answered without too close questioning as to the actual necessity for them.

Routine Laboratory Procedures.—In most Public Health Service hospitals it is customary to make an examination of the urine and sputum and to perform a Wassermann test on every individual who is admitted. Such additional laboratory investigations are made as the particular symptoms of any patient may indicate.

In some institutions it would appear that laboratory procedures are carried to an extreme degree, entailing not only unnecessary work with its accompanying expense but frequently acting as an excuse for postponing a thorough clinical examination until many unnecessary laboratory reports have been collected. Certain medical men seem to believe that making a patient go through every imaginable chemical test indicates that the case has been handled most thoroughly and in an ultrascientific manner. The modern tendency appears to be to place entirely too much confidence in the laboratory and not to devote sufficient time and effort to gaining skill in making physical examinations and correlating clinical observations.

Consultants.—Practically all marine hospitals have on their staffs local physicians who act as consultants and who are called from time to time. However, it is wise, whenever opportunity affords, to train the resident staff to do a certain amount of what is ordinarily regarded as specialty work. Just what can be accomplished in this direction will depend largely upon the particular attainments which the officers who happen to be assigned to the station may possess. The field usually covers ordinary surgery, the treatment of external diseases of the eye and the simpler conditions of the ear, nose, and throat,

duodenal drainage, and cystoscopic examinations with catheterization of the ureters.

The consultants may be on a fee or a salary status. Usually it seems that the fee basis is most satisfactory, as the men get paid for exactly what they do, and after having tried both plans, the fee system appears to give the best results. However, this will depend largely on circumstances, and also at times on the individual consultant himself.

Case Histories.—Certain blank forms on which the clinical histories of patients are recorded have been adopted by the Public Health Service. The medical history and report of the physical examination are usually written by the interne or ward surgeon. There is also a sheet on which the progress of the case is noted by the medical officer and another sheet for the nurse's records in regard to the condition of the patient as observed by her. The whole chart is kept in the nurse's office or in some other place of security where the patients and visitors can not have access to it.

It is, of course, desirable that the ward surgeon in making his rounds should be able to inspect the temperature record of the case, the laboratory findings, and the nurse's progress reports made since his last visit. In order to provide these facilities, it is a a good plan to have all the current pages of the temperature charts placed together on one aluminum chart holder. Charts are arranged in sequence according to the beds on the ward. On another chart holder are placed the current sheets of every patient, showing the doctor's report of progress, an abstract of the laboratory sheets, and the nurse's report of progress. These are also arranged in the order in which the beds are located in the ward for ease of reference while making sick call. These two charts, holding the temperature record and the current doctor's and nurse's reports, can be carried by the nurse or physician while making the rounds and are instantly available for consultation while the doctor is at the bedside.

Recording of Ward Orders.—It is necessary to have definite and positive regulations in regard to the method of recording the various orders given by the medical officers concerning the treatment of patients. The same method should obtain throughout the entire hospital to avoid any possible confusion. The plan adopted must be a simple one so that the responsibility for failure to carry out instructions can be definitely determined.

All orders given by the ward surgeon should be written out in the ward surgeon's handwriting and signed or initialed on the surgeon's progress and treatment record. Orders should not be dictated to the nurse for her to write in her order book, as mistakes may occur in transcribing them when given in this manner. At the time of making the sick call the nurse, however, may make memoranda as to the names of the patients for whom the doctor desires to prescribe.

At the completion of the sick call the officer should retire to the nurse's desk or other suitable place and write out his directions on the patient's progress and treatment records, initialing the same.

All prescriptions will be written by the medical officer on the history sheet and also copied by him on the regular blank provided for that purpose, which is then sent to the pharmacy and kept on file there.

Having gotten the order on the patient's history sheet as above indicated, provision must be made so that it is again transcribed to some other record where the nurse may easily refer to it, as orders written in this manner on the various charts might be easily overlooked.

As a part of the above system, then, the nurses keep on the ward the following records:

1. List of routine medical treatments.—On this record appears the name of the patient and after that the names of the medicines with the numbers of the prescriptions which he is getting, for example—

John Adams:
Elix. I. Q. S., t. i. d. before meals.
Spec. Rx. No. 22024 (bismuth and soda mixture) 2 hours after meals.
1 quarter grain morphine at 10 p. m., p. r. n.
William Brown: Spec. Rx. 22025 (sodium iodide solution, t. i. d.).

2. List of surgical dressings and other regular proceedings other than medicine—

John Adams: Lead and opium compresses to knee joint. Compress to be wet with this solution every four hours.
William Brown: Go to physiotherapy department every day 10.15 a. m. To be given hot water bottle at 9 p. m. for application to abdomen.
Peter Smith: Turpentine stupes on abdomen, to be changed every 2 hours.
Paul Frank: Temperature and pulse to be taken at 8 a. m., 2 p. m., and 4 p. m. Pulse to be counted for one-full minute and temperature taken at the time specified.

3. Nurse's temporary day and night order book.—In this book are written orders which are to be carried out only once or not later than within the ensuing 24 hours, for example:

John Adams: To be given an enema at 10 a. m.
William Brown: To be given one-quarter grain of morphine immediately.
Paul Frank: To be given an ounce of magnesium sulphate at 9 a. m.

It will be noted that the continuing orders in regard to the administration of medicine are consolidated in one sheet. In another record are the instructions concerning surgical dressings and the like. The temporary and immediate orders are put down in the nurses' order book; therefore a nurse coming on duty has only to review these three records to know exactly what is to be done on the ward for the ensuing 24 hours for every patient thereon. It is not necessary for her to consult the histories. It follows, then, under this plan that the doctor's

orders on the history must be copied in one of the three records above mentioned. Hence the rule must be adopted that as soon as the doctor writes the order on the surgeon's progress report the ward nurse must immediately transcribe it in the appropriate place and then check the order as having been thus recorded.

The chief nurse should, on her visits to the ward, frequently examine the current ward surgeon's progress sheets and see that the system is being properly carried out. However, in case any doubt or confusion arises, all recent current orders will be found on the progress sheets and may be conveniently consulted.

Record of Narcotics and Liquors.—It is necessary to exercise extreme care that narcotics and liquors are not misappropriated in the wards. The regulations in force in this respect should be simple and yet sufficiently comprehensive to prevent any charges that drugs of this sort have been misused or taken by persons who were not entitled to them.

Dispensing Narcotics.—When a special mixture containing narcotics of the habit-forming type is ordered for a patient, all that is necessary is to have the prescription signed by a properly qualified physician. The prescription is then filled at the pharmacy, sent to the ward, and administered by the nurse to this one patient alone. This procedure corresponds to the custom in ordinary civilian practice, and there is no necessity for making it any more strict in Public Health Service hospitals than it is outside. In some institutions the practice used to prevail of requiring that all prescriptions for narcotics be countersigned by the medical officer in charge. This practice does not seem to be necessary or reasonable nor to accomplish any good purpose.

It is always convenient and almost essential to keep a small amount of narcotics in the ward for emergency use, and it is the handling of this supply which necessitates the keeping of some special record. Good practice demands that the stores kept in the ward be as limited as is practicable in order to avoid possible theft. The narcotic books should contain the names of the patients, the amounts given to them, and the dates on which the medicine was administered. The books should be balanced at the end of every month and signed by the ward surgeon.

It has been found that nurses often have difficulty in adding and subtracting fractions, and hence it is convenient to keep the morphine in terms of eighths—that is to count a quarter as two-eighths and a half as four-eighths—and to keep codeine in fourths and whiskey in ounces. A sample page of a narcotic book which apparently answers the ordinary requirements is appended herewith:

Narcotics and whisky record

	On hand June 1	Received June, 1930															Total on hand and received
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Morphine ____ grains	2 4/8	2 0/8			2 0/8			2 0/8									8 4/8
Codeine ____ do	6 1/4																6 1/4
Whisky ____ ounces	10	10			10			10									40

NARCOTICS AND WHISKY DISPENSED DAILY

Name	Drug	June, 1926															Total dispensed
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Gillooly	Codeine ____ grains	1/8, 1/8	1/8, 1/8	1/8, 1/8	1/8, 1/8			1/8	1/8, 1/8	1/4, 1/4	3/4						1 1/4
Gillooly	Morphine ____ do	1/8, 1/8	1/8, 1/8	1/8, 1/8	1/8, 1/8	2/8, 2/8	2/8		2/8, 2/8, 2/8	2/8, 2/8, 2/8	2/8, 1/8						5/8
Lattimer	Whisky ____ ounces	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1		1, 1, 1								21
Lattimer	Morphine ____ grains				1/8, 1/8												2/8
Rainer	Whisky ____ ounces				1, 1, 1												3

	Morphine (grains)	Codeine (grains)	Whisky (ounces)
Total received	8 4/8	6 1/4	40
Total dispensed	6 0/8	1 1/4	24
Balance on hand	2 4/8	5 0/4	16

Alcoholic Liquors.—In dispensing alcoholic liquors on the ward care must be taken to see that if a stock bottle is used some of the contents are not surreptitiously removed and replaced with water. For this reason it is a wise custom to issue whisky or brandy to the wards in sealed ounce bottles, it being understood that the bottles are to be opened in the presence of the patient.

An account of whisky received, administered, and remaining on hand is carried in the same book and in the same manner as are the narcotics.

Special Containers for Poisons.—Every possible precaution must be taken to guard against the administering of some poison in mistake for a drug. Therefore all poisons in stock on the wards should be kept in *special poison bottles* properly labeled. Usually blue-glass bottles with a surface covered with small projections are used for this purpose. The color of the receptacle and its feel when picked up in the dark constitute a warning as to the dangerousness of its contents.

It is well to bear in mind that frequently the personnel fail to consider certain highly potent solutions as toxic, such as a 4 per cent solution of atropine, a saturated solution of nitrate of silver, strong solutions of cocaine, etc. It is not at all uncommon to find bottles containing such drugs in a ward cabinet without even a poison label, and in a receptacle of the same size and appearance as that used to contain innocuous remedies.

Another common practice is to keep compound cresol solutions in a toilet or similar location where an irresponsible patient can easily obtain access to it. Tincture of iodine has been mistaken for argyrol and instilled in the eye with disastrous results.

The keeping of strong chemicals in close proximity to medicines administered in teaspoon doses is always fraught with great danger, and every precaution must be taken to guard against accidents arising under such conditions.

Recording Histories.—The securing of complete and well-balanced case histories has always been a great problem in all hospitals, and from all appearances this will continue to be the case.

Composition is distasteful to the majority of medical men, and they are prone to shirk this duty. The physical examinations and progress sheets are frequently written up by beginners in medicine who do not have sufficient training to know what points to stress and what may be passed over more briefly. All these conditions combine to produce files which are inadequate and unsatisfactory for scientific or legal reference. Many Public Health Service beneficiaries must base their claims for compensation solely upon these records; hence, it is especially important that they be more complete and accurate than is the case in civilian institutions. All personnel

having to do with the making or handling of these clinical charts should be impressed with the fact that they are permanent Government documents and should be *prepared* and *preserved* accordingly.

Poor histories usually fall into one of two classes:

1. The record is very profusely written and at great length, but the important parts either are left out entirely or are very inadequately covered.

2. The description is well enough in its way, but entirely too brief, and much has not been recorded which is absolutely essential.

Case histories should be written *legibly*. Oftentimes a thoughtless doctor, to save himself a little time, will write so hurriedly that he simply puts down a mass of hieroglyphics. Afterward, when an abstract must be made, some officer must spend hours trying to decipher this scrawl. Abbreviations should never be used, for there is no assurance that anyone but the original author will know what the symbols stand for.

All results of the physical examinations should be set down completely and in detail. It is best to begin with the height and weight and general appearance, then to proceed to the head, making report of the conditions of the eyes, ears, nose, throat, and mouth; then to follow with the chest, lungs, and heart, abdomen, genitalia, anus, upper and lower extremities. The nervous system and skin should not be overlooked. The blood pressure should always be taken and recorded. The habit should be acquired of writing down each of these headings and the results afterward, even if negative.

All injuries should be carefully described, to give a good picture as to the amount of damage which was inflicted; the location of the wounds, contusions, or burns should be definitely stated, giving the sizes of the same, their appearance, the degree or depth, and in all cases the loss of function produced by the trauma.

In describing pathological conditions, negative statements are often of value, as indicating that the particular point was covered and the symptom was definitely known not to have been present. For example, the absence of nausea, vomiting, tenderness, and the like, in a case suspected of appendicitis is just as important as any positive statement concerning the signs found and recorded.

The progress of the disorder should be fully detailed, and medical officers should be impressed with the necessity of stating too much rather than too little. If the man is acutely ill, all important symptoms should be chronologically recorded, and usually a note will be necessary every day or possibly oftener.

The charts may be narrative in style and clearly show the various *important events* and *findings* on which the *diagnosis* and *treatment* or *changes* in the same are based. To carry out this idea, it is often desirable to abstract the laboratory findings from the special sheets

on which they are made into the subject matter of the history proper. For instance, a note that pus had appeared in the urine on a certain day will make it plain why a certain kind of treatment was ordered and show that a cystitis or pyelitis had developed. Later on, the incorporation in the history of the fact that the urine was now free from pus indicates the cessation of this complication and justifies a change in treatment.

This plan makes the history proper complete, easy to read and understand, and saves the annoyance of wading through numerous laboratory reports in order to insure that important facts which may have been recorded there have not been omitted from the main text.

It is usually well to insist that a note as to the patient's condition should be made every time a prescription is begun or discontinued, or when any other therapeutic measures have been instituted. This helps to make the record more complete.

In chronic cases the rule should be to make a comment as often as is necessary, but in any event some record should be made as to the condition and progress of the patient at least once a week. The monotonous repetition of "No complaints" or "Condition the same" makes the page present a poor appearance. To avoid this sameness one may describe various individual symptoms or conditions from time to time, such, for example, as the gain or loss in weight, the condition of the appetite, the ability to sleep, the mental state, or the improvement or lack of improvement of any of the common complaints, such as a headache, cough, indigestion, constipation, pain, etc., may be subjects of the weekly progress note.

All disciplinary infractions should be recorded in the histories as promptly as possible. This becomes very valuable with patients who are continually repeating minor offenses, as the cumulative evidence sometimes necessitates their discharge when any one single act would not warrant such action.

It is always well to bear in mind that the record should explain any *unusual* thing which has occurred. This is sometimes very important for the safeguarding of the reputation of the institution or ward surgeon at a later date. For example, when a patient comes in unconscious and dies before he can give any statement, or a civilian is injured near the hospital and brought in for temporary relief only, pending the care of his relatives or some city institution, great care should be taken in recording just what happened on such occasions.

Sometimes the whole or part of a history may be lost or may disappear from the ward. The file should then be rewritten as well as may be from memory, and the circumstances concerning the loss fully described.

Ward surgeons should be held responsible at all times for the clinical records on the ward, even though they are made out by an interne or assistant. When the record is finally completed, it should be put together in the following order and bound with staples for permanent filing:

Order of binding permanent clinical record.—Form 1946–A should appear first; then 1946–B, C, and D; then the temperature sheets 1946–E should follow, chronologically arranged. After the temperature charts should be placed the ward surgeon's progress and treatment record, 1946–F, also arranged chronologically. Following the ward surgeon's record should come the nurse's progress and treatment record, arranged chronologically. Following these data should be filed chronologically clinical laboratory records, such as X rays, etc., and after these all miscellaneous documents, such as letters and other information not included above. An autopsy report, when made should be filed immediately after the ward surgeon's progress and record sheets. All progress and treatment records should be numbered at the bottom of the page in sequence, giving one series of numbers to the doctor's record and one to the nurse's. At the time the chart is closed it should be numbered at the top all the way through, in red or blue pencil, so as to give the complete number of pages included in the record. In this way one can easily determine at any time if any part is missing.

Closing up the history.—One of the most common defects noted in charts is the failure of the last ward surgeon to describe in sufficient detail the condition of the patient on discharge. The note made at this time should give a clear picture of the man's actual condition. This is very essential in injury cases, but important in all.

Filing case histories.—The completed history should be reviewed carefully and signed by the ward surgeon as complete and ready for filing.

Checking histories.—It is an excellent plan to have some competent person check over the histories to discover and make note of errors in spelling, incomplete diagnoses, incorrect diagnoses numbers, typographical errors, inconsistencies such as reference to an injured eye in which it is referred to in one part of the text as the right eye and later as the left eye, records obviously incomplete, as where the site and size of injuries are not given, burns are not described, etc.

Charts found to be defective should be returned to the proper officer for correction. It has been found very beneficial to keep a record as to the number of mistakes of this sort made by the various officers. The publishing of this record has proved stimulating toward the exhibition of greater care on their part.

The histories should be thus gone over as soon as they are written and also after they have been completed. In addition to correcting

mistakes of this sort the completed history should also be reviewed by an experienced officer of the station detailed for this purpose to insure that they are adequately written up and that the diagnosis agrees with the findings set forth.

The medical officer in charge will find it absolutely essential personally to examine the histories on the wards at frequent intervals to see that they are being properly kept up, and it is equally imperative that from time to time he shall examine the completed histories also to learn how well the system of history taking and filing is being carried out.

Routine Examinations.—Unless some special measures are instituted to prevent, many of the chronic cases will be permitted to remain in the hospital without being reexamined. The men are seen every day, but are not gone over thoroughly with a stethoscope or subjected to other means of physical diagnosis. This is not a desirable condition of affairs, and much information can be obtained and better results accomplished if all cases in the hospital are gone over at regular intervals, preferably once a month.

Examining Room.—It is advantageous to have a special examining room in which the patient can talk freely with the physician and tell his story in private. This "unburdening of the soul" does much to improve the morale of the chronic wards, especially those occupied by tuberculosis patients.

Handling Communicable Diseases in the Ward.—A large percentage of cases admitted to Public Health Service hospitals are of diseases which may be properly classified as communicable. However, as there is a considerable variance in the ease with which such disorders may be carried from one person to another, the method of handling them on the wards will naturally vary to a certain extent.

Respiratory diseases.—Investigation has shown that in the act of coughing and sneezing, droplets of saliva may be expelled to a distance of 7 feet from the mouth and nose. It is apparent, then, that beds in an ordinary ward which are occupied by persons having respiratory disorders of a communicable type, should be at least 7 feet from center to center, or better still, 9 feet from center to center, to prevent a patient from spraying the secretions of the mouth or throat into the face or on the pillow of the patient adjoining him in the ward. From this it may be inferred that 70 to 90 square feet of floor space are necessary for each bed.

Usually the wards will have the required amount of floor space; but it frequently happens that some of the beds are placed closer together than they should be in order to make room for desks or for various other reasons. This is a matter that requires constant watching, as the nurses will frequently rearrange the beds after they have been properly spaced.

There is plenty of evidence available that mess gear which has been utilized by patients with respiratory disorders may be an important means of transferring infection from one person to another if it is not properly sterilized after each meal. Hence it is important that in every ward the washing of knives, forks, spoons, tumblers, and cups should be so performed as to kill the pathogenic bacteria which may have become lodged thereon. Mechanical dishwashers with plenty of hot soap solution are effective disinfectors. In the absence of such equipment, special care should be taken that the eating utensils are treated in such a manner as to destroy any infectious material retained on them. Boiling is, of course, the most suitable method of sterilizing these articles; however, where actual boiling may not be practicable, careful mechanical cleansing with soap and hot water, followed by a thorough rinsing with boiling hot water, may suffice, provided plenty of boiling water is used.

Each patient should have his own thermometer and also his own medicine glasses. Special devices holding 12 or more test tubes are now available for the keeping of separate thermometers for each patient, and should be supplied to every ward. Each man, of course, has his own individual drinking cup and towels; hence there should be no danger of cross infection from these sources.

An important measure in the handling of transmissible respiratory disorders is the placing of screens between the beds. This is a potent method of preventing cross infections and can easily be carried out.

Venereal disease.—All patients suffering from acute venereal disease in a transmissible stage are assigned to a special ward, and such patients, when ambulatory, are not permitted to eat in any of the general dining rooms. If a special dining room for these men can not be supplied, they should be fed in the ward from trays and their eating utensils should be carefully disinfected after use. It should be noted that this disinfection is essential, no matter whether the utensils leave the ward or not, because cross infection in a venereal ward might occur. As a matter of fact, however, infection through eating utensils in the case of venereal diseases is very much less likely than infection in the case of respiratory disorders.

It is advisable for workers in genito-urinary dispensaries where a great amount of irrigating is done, to wear glass spectacles to prevent the possibility of a splash of infectious material into the conjunctiva. It may be somewhat comforting, however, to know that in some work that was done in Paris it was found that the pus which came from blennorrhagic discharges did not cause a specific conjunctivitis if it were diluted beyond one-tenth. In other words, gonorrheal pus when diluted does not cause gonorrheal conjunctivitis if it is mixed in at least nine parts of water.

This probably explains why we encounter so few cases of gonorrheal conjunctivitis in adults. If infectious material of such a nature is received in the eye, the eye should be thoroughly and completely washed out with a solution of argyrol of 20 per cent strength, or mercurochrome 1 per cent may be instilled in the eye once an hour for the next four to eight hours. It is not advisable to use bichloride solution in accidents of this sort unless nothing else is available, and the solution should be very dilute, say 1 to 30,000.

Where wounds like needle pricks are received when the hands are contaminated with syphilitic blood or discharges various procedures may be adopted. If necessary, the wound should be washed and calomel ointment 33⅓ per cent thoroughly massaged into the area. Calomel ointment should also be utilized in case an excoriated surface is contaminated with material supposedly containing syphilitic virus, after the surface has been washed. These methods are very much better than to attempt to cauterize the wound or area with destructive agents such as carbolic or nitric acids. Where escharotic substances are used, an indurated sore is produced which at times can not be easily distinguished from the initial lesion of lues, frequently causing the injured one much unnecessary worry.

It has been frequently noted that physiotherapy aides, dietitians, librarians, and similar classes of the personnel who have to come in contact with the patients are often apparently extremely ignorant as to the methods of transmission of venereal infections to innocent parties. Employees have been encountered who were even afraid to touch the skin of patients from the venereal disease wards. Such ideas may seriously interfere with the performance of duty or keep the aide in a continual state of morbid fear. Hence, it is always wise to explain fully to these members of the force that there is no danger in the execution of their ordinary duties.

A general assurance should also be given that the medical officers have such things constantly in mind, and in ordering treatments would never make any requests for the same without warning the employee should there be any risk to her.

Tuberculosis Wards.—Unfortunately, pulmonary tuberculosis is quite common among American seamen, and a certain percentage of such cases is always found in all Public Health Service hospitals. Suitable cases are transferred to the service sanitarium at Fort Stanton, N. Mex., which is maintained in the arid region of the Southwest especially for the treatment of these beneficiaries.

Many patients with tuberculosis, however, are received in such condition that transfer is not advisable. Hence they must be cared for in Public Health Service general hospitals, and most of the stations contain a special ward or wards for this purpose. Naturally these men must be given the most modern form of treatment, and hence

each institution has all the problems of conducting a tuberculosis sanitarium on a greater or lesser scale.

In selecting a ward for the tuberculous patients several points should be borne in mind. The location should be quiet, but also bright and sunny. If possible, a large sun porch should be available on the same floor, with a door opening into it of sufficient width to permit the beds to be rolled out into the sun. Out-of-door treatment should be provided during suitable weather, if practicable.

For heliotherapy, the sun porch should be located to receive the maximum amount of solar rays during the day, and it must be provided with suitable screens to protect the patients from drafts; and as the patients are practically nude, provision must also be made to screen them from the sight of visitors.

When the men must be housed in an indoor ward, ample means of ventilation should be provided, but care should be taken to insure that in the effort to imitate outdoor conditions the personnel do not permit the patients to remain in a draft. (In this connection see the notes on "Ventilation of Wards.")

The breathing of fresh, cool air increases the appetite, stimulates the digestive powers, and probably helps to decrease the fever. However, the treatment may be pushed to the point where the disadvantages inherent to extreme degrees of cold overcome the benefits. The old-fashioned idea that it is desirable or necessary to keep the wards at an extremely low temperature in winter is being gradually abandoned. Common sense must be the guide here as elsewhere. Nothing is gained by having the room so bleak that the nurses can not wait on the sick and the food becomes chilled before it can be eaten.

The equipment of the tuberculosis ward is practically the same as that of the other parts of the hospital. Scales for the weekly weighing of the patients are essential; also steamer chairs for lounging in the sun. Usually special arrangements will have to be made to insure hot food, as the temperature at which this ward is kept makes this detail even more necessary than in other parts of the hospital, and the need of good food here is even more imperative.

The ration itself will have to be given special thought, as a liberal, appetizing diet is a most important part of the treatment. An excellent plan is to make the toast and cook the eggs, ham, and bacon in the ward diet kitchen. This modified form of individual service insures hot food and is usually greatly appreciated by the patients.

A dishwasher should be provided for the ward to insure the sterilization of the eating utensils.

Rest hours.—The rest hours must be strictly enforced and absolute quiet maintained in the ward at that time. This means, of course, the exclusion of visitors and all other forms of mental distraction. The entire hospital personnel should be trained not to pass through the

ward during these periods or to make unnecessary noise in the neighborhood.

Personal hygiene.—Rules concerning spitting on the floor, covering the face when coughing, etc., will, of course, be rigidly enforced, and these patients will be given the regular sanitarium training regarding such matters. The establishment of such habits is one of the valuable features of institutional treatment. The men should not be permitted to use handkerchiefs, but should be supplied with gauze which is afterwards burned. Each one should be furnished with a paper bag of medium size in which to place articles soiled by sputum or other discharges. Similar bags are very convenient in various parts of the station for the assembling of any infectious material, prior to its destruction by burning. If paper fillers are used for the sputum cups, it is not necessary or desirable to use a disinfectant in the container.

Some hospitals use a sweeping compound of some sort when sweeping up the floors of wards occupied by tuberculosis patients. While this may not be necessary, it may have some psychic effect on the ward attendants and be useful from that standpoint. Sweeping compounds may be very cheaply and easily prepared by impregnating sawdust with a small amount of light mineral oil and the addition thereto of some odorous disinfectant such as pine oil compound.

Woolen caps and socks are usually provided by the hospital in cold weather. A number of earthenware hot-water bottles, or "pigs," as they are often called, are a great help in keeping the debilitated patients warm when they are exposed to low temperatures at night.

Sterilization of eating utensils of tuberculosis patients.—Usually it is customary to have a separate dishwasher for the tuberculosis wards, which obviates any special precautions in regard to handling their mess gear.

If only a few patients of this type are in the hospital and a special dishwasher is not available, their equipment may be best sterilized by boiling and then cleansing in the ordinary way.

The dishes should first of all be scraped as completely as possible, then placed in a suitable container such as a wash boiler, with 1 or 2 inches of water, covered fairly tightly, set on the stove, and allowed to remain after boiling has started for approximately 10 minutes. The flowing steam will effectually kill all bacteria present.

Heat is by all means to be preferred to any chemical agents for the purposes above described, and it is difficult to imagine how any hospital could be able to provide food and not find it practicable to utilize heat for sterilization in the method described.

If chemical means must be used in an emergency, a 5 to 10 per cent solution of formalin (remembering that formalin is a 40 per cent solution of formaldehyde in water) is probably the most suitable solution for the purpose.

After being scraped, the eating utensils should be allowed to soak in this solution for at least one-half an hour at room temperature and then be thoroughly rinsed before being washed in the usual manner.

Other agents which might be used are chlorinated lime 4 per cent or compound cresol solution of the same strength. Chlorinated lime has the disadvantage of being of uncertain chlorine content after the container has once been opened, and also of leaving a troublesome residue. Compound cresol solution is objectionable chiefly on account of the odor, which is difficult to remove.

Diagnosis of tuberculosis and general comments.—The early diagnosis of pulmonary tuberculosis among seamen is very important and calls for conscientious and careful work by officers in both out-patient office and hospital. An occasional staff meeting should be devoted to it and the literature should be frequently reviewed. Asst. Surg. Gen. F. C. Smith has furnished the following comment:

The diagnosis of incipient pulmonary tuberculosis is seldom made by our medical officers. Many seamen with tuberculosis first recognized when far advanced have previously been treated in out-patient offices, and even in marine hospitals, for pleurisy, bronchitis, malaria, anal fistula, etc. Terminal cases are too frequently recommended for transfer to Fort Stanton, N. Mex., in contravention of Hospital Division Circular No. 218. The following suggestions apply to both out-patient office and hospital:

1. Take a careful history. Pleurisy, blood spitting, fatigue, wasting, delayed convalescence from any acute disease shout their warning.

2. Every patient with a cough or any other symptom of tuberculosis should be stethoscoped while stripped to the waist in a warm quiet room. In early stages râles are heard only during the inspiration following a cough.

3. A temperature record (2, 4, 6, and 8 p. m.) for a week or more is often necessary. The average out-patient readily learns to take his own temperature; thermometers should be lent for the purpose.

4. The doctor's responsibility does not end if a patient declines observation in hospital. A negative sputum is as meaningless as a single normal temperature reading. Make many tests; sediment specimens and use pigs. Give the out-patient penalty (postage free) containers (supplied by the bureau upon requisition) to mail sputum specimens.

5. The X ray should be used in doubtful cases; tuberculosis can not be excluded without it; but it should not become a lazy man's criterion.

6. Early diagnosis can often be made in the out-patient office by an efficient medical officer, familiar with the stethoscope, alert and willing to devote a considerable amount of time to observation and repeated examinations. Patients may sometimes be recommended for transfer to Fort Stanton from out-patient status.

7. A patient admitted to hospital with fever should be kept at absolute rest in bed in an effort to prepare him for transfer to Fort Stanton. Some early cases have the highest temperatures. Rest for such patients is specific if complete. Bathroom privileges may sometimes be compatible with this rest but not always. Visitors must often be excluded and talking prohibited. A private room and even a special attendant may be required at this critical time.

8. To prepare a patient for transfer to Fort Stanton, focal infections of all kinds should be eliminated and dental treatment completed.

9. Patients otherwise unsuitable for Fort Stanton may occasionally be fit subjects for chest surgery or induced pneumothorax.

10. Self-transfer to Fort Stanton should never be suggested or encouraged.

Typhoid fever cases.—The proper methods of handling typhoid fever cases in a ward are so well understood by all hospital personnel that it seems scarcely necessary to reiterate them here. They should include, however, the disinfection of all stools and urine by the addition of an equal volume of 10 per cent compound cresol solution, or formalin, mixed very well, the mixed material to stand at least an hour—and better, two hours—before permitting it to enter into the sewer. There should always be available, too, in the nurse's room, when such cases are on the ward, a 2 per cent compound cresol solution in which the nurses may thoroughly wash their hands every time thay handle such a patient.

(N. B.—All medical officers, nurses, and orderlies should be thoroughly instructed concerning the importance of thoroughly washing their hands before eating. This washing process should always be performed immediately preceding their visit to the dining room or placing any food in the mouth. Another very important habit for all such people (those who wait upon the sick) to acquire is to avoid rubbing the eyes with the finger tips. This is absolutely essential for workers in trachoma wards or in eye clinics. If it is necessary to rub the eye on account of itching, the habit of stroking the same with the back of the wrist joint should be acquired.)

Cases requiring actual isolation.—Unlike most civilian institutions, the marine hospitals must accept and care for patients suffering with the so-called contagious disorders, such as scarlet fever, measles, mumps, etc. Arrangements are usually made so that seamen taken with smallpox, plague, or other diseases which the local health regulations require to be treated in special hospitals may be transferred to the city lazaretto, but the station must have suitable facilities for housing the ordinary exanthemata. It is usually necessary to set aside at least one room which can be used for such patients.

It is still customary to treat certain of the communicable disorders under conditions of more or less complete isolation. These diseases are those in which the infecting agent has not yet been discovered or those in which the means of transference is not yet definitely understood. Under this heading would come scarlet fever, mumps, measles, etc. Definite rules as to how these cases should be handled should be promulgated and thoroughly understood by all the personnel concerned. This system will have to be modified to suit the various conditions which may arise, but in general may be somewhat as follows:

1. The patient is assigned to a room on the door of which is a notice prohibiting all visitors; just outside the door is placed a table or other container on which is located a basin filled with a 2 per cent compound cresol solution.

2. Separate protective outfits consisting of a gown, cap, and possibly gloves are provided for the ward surgeon, the nurse, and the orderly. These articles are worn in every instance by anyone who goes into the room. On coming out they are removed and the hands are carefully washed in the solution. The gowns should be hung up just outside the door, in a locker if possible, or placed on a table near by where they are easy of access.

3. The thermometer and other appliances used for the patient should preferably remain in the room until the case is terminated.

4. Soiled dishes and mess gear may be placed in a bucket of water in the room and carried directly from there to the diet kitchen, where they are boiled before they are handled or replaced in the regular supply. It is better to adopt a plan of keeping the dishes and utensils of this sort in the room and cleaning them there, if this is practicable.

5. Experience has shown that a 2 per cent solution of compound cresol is an efficient germicide for washing the hands, and probably less irritating than any other practical substance yet devised for this purpose. Hence its use should be made compulsory rather than optional with the personnel. Unless special precautions are taken, however, it will be found that the solution is not made up to the required strength, which may give a false sense of security to those who use it when it is not properly prepared.

Bed linen from isolation cases.—Ordinary laundering plants, where steam is used to heat the washers, effectively sterilize all linen subjected to approved modern laundering processes. Hence the only problem arising in a hospital concerning the disposal of linen from patients suffering from transmissible disorders such as typhoid fever, measles, or tuberculosis is the protection of nurses or employees who may handle the linen previous to its being placed in the washers.

One plan is to place a tub filled with disinfectant solution in the room and soak the bed linen in this before anyone except the orderly or nurse touches it. This is an extremely irksome and messy performance, as the wet linen is difficult to handle and still more difficult to dry. Where sheets are soiled with typhoid stools, or pillow cases with diphtheria discharges, such a course is absolutely necessary; but ordinarily the linen may be placed in a suitable container and carried to the laundry without special procedures except care being taken that the attendants handling it are not unnecessarily exposed to inhalation of dust, and that if the hands become soiled they are properly cleansed afterward.

The receptacle used to convey the bedding to the laundry should be lined with a sheet known to be uninfected, which goes into the washer with the other articles and protects the basket from being contaminated.

Disposal of infectious material.—Each ward will have its accumulation of infectious material such as sputum cups, soiled dressings, tongue depressors, etc., which can not be carried off by the sewers. Special receptacles should be provided for these articles and they should be kept separate from other trash, and eventually be burned. Great care has to be exercised in this respect or otherwise newspapers, orange peel, garbage, and similar wet refuse will be mixed in with the dressings, adding greatly to the bulk and making the ultimate disposal very much more difficult. For this reason, each ward should have its garbage cans, its trash cans or baskets, and its containers for soiled dressings and similar articles which must be destroyed by fire. If no other means is available, these substances may be disposed of under the furnace boilers, although such method of disposal is not recommended, as the resulting ash interferes with keeping up a clean fire.

It is much better to have a special incinerator of some sort—gas preferably—to be utilized for the convenient and cleanly destruction of all sputum cups, dressings, and other burnable articles which have become infected. Constant watchfulness will have to be exercised to see that the orderlies keep these waste products properly assorted in their respective containers.

Disposal of trash.—The amount of trash in the form of old newspapers, magazines, paper wrappings, candy boxes, tobacco containers, burnt matches, etc., which accumulates on a ward is surprising. Old newspapers and magazines may be kept separate and sold, the funds derived therefrom being utilized for the comfort of patients. The selling of grease, empty barrels, boxes, etc., belonging to the Government is prohibited by regulations, even though these articles are not on the property return. The newspapers and magazines belong to the patients or personnel.

Disposal of garbage.—The ward will also have its daily accumulation of garbage. Very frequently as mentioned above, the attendants will mix the garbage and other waste together. This should not be permitted. The garbage is generally carried to a garbage station of some sort, and here special care is also necessary or the attendants are likely to allow some of it to fall on the floor, producing very unsatisfactory conditions in the collecting depot.

It is usually necessary to detail some one to be in charge of the garbage and trash station to see that the various wastes coming from the wards and other parts of the institution are properly disposed of in the appropriate containers and that dressings and other things which should be burned are not deposited therein. When the refuse is correctly handled and disposal is made by careful methods it is a matter of offense to no one; but if the attendants are careless the resulting nuisances are likely to be very disturbing.

One plan is to keep the collecting house locked, to appoint a definite hour when the person in charge opens it and remains there while the

ward orderlies bring down their waste and place it in the proper containers. Opportunity is then taken to make them re-sort any material which has been improperly classified.

These minor details have been described at some length, as they are all important matters in hospital management and are oftentimes overlooked, until some visiting inspector makes some very uncomplimentary comments on the conditions observed.

Provision for the Care of Patients Suffering from Mental Derangements.—All hospitals experience considerable difficulty with the patient who becomes mentally irresponsible while under their care. It is absolutely necessary properly to safeguard these individuals pending their transfer to special institutions for this type of case. When a seaman becomes violent and is a menace to himself and others, the regulations permit the medical officer in charge to transfer him to a local asylum pending the making of more permanent arrangements for his care. Officers should familiarize themselves with the proper method of procedure as laid down in the regulations when this emergency arises.

At times it will be apparent that the mental disorder is only temporary and that immediate transfer to an institution for the care of the insane is not warranted or practicable. Delirium developing in an acutely ill person would come under this heading. Such patients must be properly protected during these attacks, and every hospital should have a room so equipped that cases of this sort can be treated conveniently and with safety.

The fitting up of a room for this purpose is by no means easy. Usually, gratings are placed over the windows and radiators and special locks placed on a reenforced door; however, when a violent patient is shut up in such a space it is not unusual to find that he is able to rip the gratings from their fastenings and to escape, with possible serious results to himself and much criticism to the institution.

The following are the minimum requirements for devising a suitable room of the kind mentioned: The gratings must be fastened to the windows in such a manner that the windows can be washed. They must not be screwed fast with screws from the inside, because frequently the inmate will manage to unloose such holding devices. The best method of fastening these gratings is to run ring bolts completely through the building, the gratings being padlocked to these bolts. Padlocks must be of a good type or the patients may pick them. The grating itself should be at least twice the weight usually installed for this purpose.[1]

[1] The specification should read: "Screens to be made of 0.244 mesh wire with 2 inch in the clear, diamond mesh; and frames to be of channel iron, 1½ by ¾ inches, all to be hot galvanized after fabrication."

The same description applies to the various protective appliances used over the steam radiators and electric lights. Everything on the inside of the room should be perfectly smooth so that no projection is left on which a patient may hang himself with bed clothing. The door should be of solid construction of 3-ply ⅞-inch material, each layer running in a different direction. An observation window should be provided in the door, screened with ½-inch wire mesh inserted securely between the layers of the wood.

Bolts on the outside should be used to fasten the door; usually three of a very rugged type are required. A spring lock should never be on the outside, as a nurse or attendant may be fastened in the room by such a device and unable to escape, if attacked.

All switches controlling the lights should be on the outside of the room, and no exposed wires carrying electric currents should be run anywhere in the inside.

It is not at all unusual in making morning sick call to find that the inmate of the psychopathic room has wrenched off a bar from some piece of the furniture and proceeded to do a great deal of damage to the woodwork or broken the windows during the preceding night.

A survey of the havoc wrought would indicate in all these instances that a great deal of noise must have been made and a considerable time elapsed before the incident was completed. The conclusion is inevitable under these circumstances that the patients have not been given proper supervision during the night; hence nurses and orderlies should be especially instructed to watch restrained patients carefully and not let them hammer continuously on the doors or gratings with the assumption that they can do no harm.

It should apparently be unnecessary to add that patients needing restraint should not be intrusted with a knife and fork, razor, pen-knife, or matches when alone. However, they are allowed these things so often that the warning here seems necessary.

Serious Illness of Patients.—It is necessary to notify the nearest relative when a patient becomes dangerously ill. If time permits, this can be done by letter, but usually the telegraph must be used. The message need not give the diagnosis, but should inform the interested parties that the patient is in a serious condition and also the location of the hospital. For example, it might read as follows:

BOSTON, MASS., *June 1, 1930.*

Your husband, John, is seriously ill in marine hospital.

Doctor SMITH.

The above facts are necessary in order that the relative may clearly understand the case and know where to address a reply.

It is convenient to keep on the wards a blank form for the purpose of sending these messages, and the form should be so prepared that

after the message has been sent, the blank is to be returned to the surgeon by the chief clerk with a statement to the effect that the transaction has been completed. This makes a double check on the procedure, which is found to be very useful. A form such as that presented here will be found suitable.

The matter of informing the relatives is a very important one, and a great deal of criticism to institutions has resulted from the failure to carry out this obligation properly. In spite of all instructions that can be issued to the ward surgeons, from time to time it will be neglected, and the medical officer in charge will find it highly advisable to make inquiry as to whether or not the relatives have been notified every time he notes that a patient is extremely ill.

_____
(Date)

_____
(Time)

To Chief Clerk:

Please send the following message to the relative to be notified in case of serious illness concerning patient_____, ward_____

_____
(Signature, ward surgeon)

The above message was wired
phoned
delivered by messenger

at_____ m._____, _____
(Time) (Date)

_____
Chief Clerk.

When it is believed that patients are about to die it is advisable to send for some representative of their religious faith to come and visit them. Frequently the relatives will make inquiries concerning this point after a death, and they appear to consider it a duty of the hospital authorities to see that the priest or clergyman is called on such occasions.

Consent to Operations.—Written consent should be obtained for all operations except those of a trivial nature. If a patient is brought in unconscious and operation is needed at once to save life and his relatives can not be reached to give permission for him, a consultation of medical officers should be held and the attending physicians should certify to the immediate necessity of the measures to be taken. A similar plan may be followed if the patient is insane and has no legal guardian. In the case of a minor the consent of a parent must be obtained in all cases where practicable, in addition to the consent of the patient himself.

The blank form in use should contain a clause authorizing the surgeon to use his judgment in the case of an emergency. A suggested wording is as follows:

UNITED STATES MARINE HOSPITAL No. 1,
Baltimore, Md., July 1, 1930.

I hereby give my written consent to an operation for_____

_____

I further agree and desire that, should any unforeseen condition arise or be discovered at the time of the operation, the operating surgeon institute any additional measures he deems necessary for my safety and well being, and I hereby authorize him to do so.

(Signed.) _____

The consent form may be mimeographed on the reverse side of the operative record blank.

In filling out his record either the name of the operation to be performed or the condition necessitating the same may be written in, but the practice of having the patient sign the form in blank should not be permitted, as a dispute may arise afterward as to what he understood was to be done. The authorization should be broad but exceedingly definite. If there is any possibility of an amputation or removal of an organ, this should always be specifically mentioned in the form. In certain emergencies an oral authorization will have to be accepted, but there should always be one or more witnesses present in such instances, and their names and the circumstances should be recorded in the chart.

Usually the burden of seeing that the patient has given consent in the proper manner rests upon the surgeon doing the operation; but as consultants may operate at times in Public Health Service hospitals and be unaware of the routine procedure, it is a good rule to make the ward surgeon in charge of the case responsible for seeing that this detail has been correctly complied with before the patient leaves his ward for the operating room.

The Disposal of Valuables of Deceased Patients.—The method of disposing of unclaimed articles of deceased patients is described in the regulations. However, a few words in regard to the proper course to pursue when relatives claim valuable effects may be in order.

It is necessary for the medical officer to be on guard to see that moneys and other personal belongings are intrusted to the proper individual. At times questions of serious doubt will arise as to the propriety of surrendering considerable sums of money which may be in the station safe to individuals claiming to be relatives of the deceased. The matter may be further complicated if the patient has not seen or identified these persons before his death.

Where the patient has a wife who has been present before the death it is always safe to turn over any effects to her, but when more distant relatives are concerned the decision is not so easy.

Although a relative may claim the body and bear the funeral expenses, this alone does not entitle him to receive valuables held by the Government. Later a nearer relative may appear, and the medical officer may find himself in a very awkward position if he has given money intrusted to him to a person who was not entitled to receive it.

Patients on admission give the name of their nearest relative or friend whom they desire to have notified in case of serious illness, and also information as to the marital state; but while this information may be used as a guide, it may not be true. Occasionally men will state that they are single when in reality they have a wife and children who are lawful heirs.

Where the sum involved is any considerable amount, it is usually wise to retain custody of money, and of bank books, and the like, until an administrator has been appointed by the court and then turn the property over to him, obtaining proper receipt for it.

Deaths of Patients.—The procedure to be followed in the case of the death of a patient is rather minutely described in the regulations. If the relatives are not present, they are of course notified, and the message to them asking whether they will bear the expenses of the funeral should be comprehensive enough to explain to them that the Government does not pay the expense of transportation to the seaman's home or the expenses for the preparation of the body for shipment. If this is not gone into somewhat in detail, it may be necessary to send several other telegrams, causing increased expense.

In many instances the seaman's home is at some distant point, and death notices will not be answered for a number of hours. For this reason it is sometimes desirable to have the body embalmed pending the ultimate decision as to its disposition. The hospital contract for burial should include the separate item of embalming in order to provide for this contingency.

Coroner's Cases.—Care should be taken to report to the coroner all deaths which under the State law are coroner's cases. Usually any death occurring within 24 hours after the patient's admission is a coroner's case, and in many States a death following or produced by an injury must be reported to the coroner immediately. When the death comes under investigation by the coroner no autopsy or embalming can be done before the coroner has given his consent.

Autopsies.—It has been noted that when post-mortem examinations are made infrequently, the medical officers lose their ability to identify pathological conditions accurately when a body is opened; this is especially true of brain and heart lesions. Every effort should

therefore be made to obtain consent to perform autopsies. Frequently this will require considerable tact.

In discussing the subject with the relatives, it is not wise to use the word "autopsy"; the term "examination of the body" should be used instead. The point should be stressed that such examinations often yield valuable information to the near living relatives, as, for example, settling the question as to the presence or absence of cancer or tuberculosis may be an important matter for a man's children. Another item is the fact that an accurate death certificate may enable the children or widow to collect compensation or insurance which might be withheld unless the cause of death can be clearly stated. It is advisable to explain that if other members of the family should ever become ill in somewhat the same way, the knowledge gained from the post-mortem might be very useful to the doctor attending them and even indirectly instrumental in saving life. These arguments are much more likely to have weight than a plea to further scientific knowledge.

Blank forms for giving consent should always be on hand. If permission can not be secured for a complete examination, try to get consent for a partial autopsy. If the understanding is that only one organ is to be examined, be sure that the pathologist knows the limitations, so that the hospital staff shall keep within the agreement. It is important to keep faith in matters of this sort.

The post-mortem should be performed carefully and in a cleanly manner. Incisions should not be made longer than necessary, and every effort should be put forth to preserve the cadaver in a presentable appearance for burial. Nowadays it is customary to embalm all bodies, and this should be borne in mind. If the heart or an organ is removed, the large vessels should be tied so the embalmer can nevertheless inject the body. The undertaker should be consulted as to whether or not he wants the abdomen sewed up after a post-mortem.

The person or organization making the funeral arrangements or paying the expenses of the same does not necessarily have the legal right to grant permission to perform an autopsy, and the officer in charge should be certain that the blank has been signed by the individual who has been vested by law with the authority to execute the same.

Suggestions concerning the method of making autopsies will be found on page 236 of the appendix.

Duties of Social Service Worker.—Individuals confined to bed or the ward will at times need a certain amount of assistance outside of the ordinary care and nursing given them by the hospital. Among these needs may be mentioned the making out of compensation blanks, the writing of letters, cashing checks, opening bank accounts,

and the purchase from time to time of various articles for personal use. The detail of some employee to attend to these commissions is almost essential, and it is convenient to add to her duties the care of the library, the distribution of the mail, the arrangement of funerals, and the supervision of social service activities generally.

If the person selected has the proper qualifications for the task, it is remarkable how great an asset she may be to an institution and the amount of comfort and pleasure she will bring to the patients. The woman designated for this service should be sympathetic in nature, broad in character, well endowed with common sense, and sincerely interested in the work.

To her may be intrusted arrangements for the various religious services held in the hospital, the planning of the social recreations for both patients and personnel, and a number of minor details concerning the personal welfare of the men which will arise from time to time.

Gifts of books, magazines, etc.—The social service worker, by properly approaching various philanthropic individuals and societies, will often be able to interest them in the seamen. From such sources may be obtained donations of books and magazines and occasionally financial assistance for some patient requiring such aid. In the holiday season they will contribute toward the various entertainments usually given at that time.

Inquiries concerning patients.—All inquiries concerning the physical condition of patients, coming from the outside, should be referred to the social service rather than have them answered by the telephone operator. In order that this may be accomplished intelligently, the individual designated for this purpose must be supplied with a list of the patients, showing their condition, which is kept strictly up to date. Additional information should be obtained from the ward surgeon or officer of the day whenever required. There are various mechanical devices for holding such lists which are convenient and easily maintained.

Transfer of chronic patients.—Some of the chronic patients will be entitled to admission to the various homes and institutions. To secure this privilege, however, usually certain documentary evidence in regard to their service on the sea, in the military establishments, or of their legal residence, etc., is required. The securing of the necessary papers frequently demands extensive correspondence and follow-up work. This duty should be assigned to the social service, and this division should be thoroughly familar with the requirements in force in the different institutions.

Helping indigent patients.—Occasionally after long residence in the hospital, at the time of discharge, a seaman will be completely without funds or even wearable clothing. Such cases should be referred to

the social service who may be able to supply clothing and help the individual to secure a position or direct him to some organization who will furnish similar assistance.

Discharge of chronic patients.—The matter of arranging for the transfer of patients needing institutional care and no longer requiring hospital treatment is very important, and at times will require the close supervision of the medical officer in charge.

Asst. Surg. Gen. F. C. Smith furnishes the following pertinent and helpful information concerning this subject:

To provide beds for acute medical and surgical patients in marine hospitals (the "temporary relief" contemplated in the act of July 16, 1798) is a serious problem. The discharge of patients needing institutional or domiciliary care but not hospital treatment requires a knowledge of local and other resources, tact, experience, ingenuity, and industry. Some officers, zealous and resourceful, attempt to solve it, but others are indifferent. Replies to a bureau questionnaire revealed a few medical officers who naïvely admitted that they had never been successful in discharging a chronic patient to another institution. The following is a representative but incomplete list of agencies employed by the successful:

Sailors' Snug Harbor.—In 1929 alone about 30 patients were discharged to Snug Harbor, 8 of these being from the San Francisco Marine Hospital.

National and State soldiers' and sailors' homes and Veterans' Bureau hospitals.

State and other public hospitals for insane, epileptic, blind and tuberculous.—A citizen loses none of his local rights by being a beneficiary of the Public Health Service. In 1929, 49 insane patients were discharged to State institutions.

County and city homes.—In some States a year in the marine hospital establishes residential qualifications.

Catholic homes and Masonic homes for the aged.

Local and national facilities for vocational rehabilitation.—Discharged from the New Orleans Marine Hospital a blind patient was trained as a broom maker and a legless man as a sign writer.

Convalescent homes.—In 1929 Ellis Island and Stapleton thus discharged 38 patients, not all, however, of chronic type.

State and Federal vocational training facilities.—See hospital division circular letter No. 220, dated April 1, 1929.

The marine hospital at Ellis Island in 1929 discharged 40 patients to other hospitals (not marine hospitals), placing insane patients in State hospitals in seven different States and sending tuberculous patients unsuitable for transfer to Fort Stanton to three State or municipal sanatoria. It utilized several Veterans' Bureau hospitals, a naval hospital, discharged two patients to the Disabled Sailors' Hospital, Augusta, Me., and one to the Disabled Sailors' Home, Bath, N. Y., placed four patients not eligible for Snug Harbor in homes for the aged, and returned three, with consular assistance, to foreign countries.

SAILORS' SNUG HARBOR

This splendid institution (see *The Mentor*, August, 1929), permanently endowed, is adding dormitories, etc., to increase its capacity, but does not advertise itself. A seaman must apply for admission and prove eligibility. "The principal requirement is that a man shall have had service under the United States flag. This service must be deep sea or Great Lakes service, as service on other lakes, harbors, rivers, etc., does not count. In addition to his sea service a man must be aged or decrepit or worn out and not in possession of sufficient means to maintain himself."

The Harbor insists that its inmates be American citizens either by birth or naturalization; but naturalization for old American seamen is comparatively easy, providing first papers were filed. An applicant must also sign an agreement promising compliance with certain regulations of the institution, which states in part as follows:

In consideration of my being provided with a comfortable home, with food, clothing, and medical attendance, and the other privileges afforded, I will always, except when excused by the physician, readily and cheerfully perform such labor and service in and about the Institution and Farm as may be required of me by the Governor without expecting or claiming any other reward or remuneration therefor.

Snug Harbor considers its requirements for admission none too strict and believes that a sailor, aged and infirm from sea duty covering as a rule many years, ought to have records available covering five years of sea service, 10 years for foreign born.

A seaman needs assistance to obtain admission and gets little help or encouragement from the Harbor when making application. He must execute several difficult documents, and if these meet the requirements he is admitted, but not otherwise. Snug Harbor does not want to see the seaman until his papers are accepted. To establish his eligibility it is convenient to remember that seamen going to foreign ports are signed on in the presence of the shipping commissioner of the port and a copy of each crew list is filed with the collector of customs. A similar list is filed upon the return of the vessel from a foreign port. All of these records for many years back can be secured from the shipping commissioner or the collector of customs. The old San Francisco shipping records were destroyed by fire in 1906, but the Harbor may accept sworn statements in lieu thereof. Vessels plying coastwise do not file crew lists, but the owners or agents may have records to show service thereon.

Experience with Snug Harbor has varied greatly with different medical officers. The following cases are representative:

From Buffalo: C. F., 58, tabes dorsalis. H. T., 62, blind. Captain T. B., 72, paralysis. J. M., 70, heart disease. F. W., 65, eye trouble. A. W., 63, arthritis. J. C., 75, senility.

From Portland, Me.: W. V., 48, hemiplegia.

From Ellis Island: W. A., 72, myocarditis. G. B., 64, spondylitis. I. B., 64, arthritis. T. C., 34, compression chest, due to fall.

From San Francisco: J. N., 69, tuberculosis, arrested. J. F., 30, varicose veins. E. R., 60, and three others, arteriosclerosis. J. S., 65, and three others, nephritis. M. R., 64, senile neurosis. M. H., 65, and one other, varicose ulcer. J. M., 47, heart disease. K. R., 46, multiple sclerosis. F. J., 42, tabes dorsalis.

Frequently it is necessary to inspire the desire to enter Snug Harbor or the seaman's efforts to establish eligibility will be half-hearted. A reluctant patient may be stimulated to make application to Snug Harbor by the knowledge of approaching discharge from marine hospital, and indeed the same stimulation will often reveal responsible relatives willing to provide a home for him. The following is the usual procedure to secure admission to Snug Harbor:

1. Secure application forms from Capt. Edward B. Cole, Sailors' Snug Harbor, 262 Greene Street, New York City. Request should be made in each individual case by or for the patient.
2. Fill out, preferably on typewriter, the various forms required of patients, which include the following:
   - Personal and sea service history.
   - Applicant's statement of sea service.
   - Certified statement of sea service.
   - Certificate as to sanity.
3. Assist patient in securing two or three letters certifying good character, and if foreign born proof of nationality.

Data concerning required sea service of applicant is gathered from the patien by having him recall as far as possible every voyage made, and the record of hi stated sea service is then sent to respective United States shipping commissioner for verification, and a record of his coastwise service, if any, is verified throug respective ship operators.

The exact duties of the social service workers will depend upo the size of the station and various other circumstances, so they hav been but briefly outlined here.

Care of Ward Property.—All public institutions suffer seriousl from the loss of certain items of property. In a hospital the towels pajamas, bed slippers, medicine glasses, sheets, pillowcases, and eve blankets and other bulky articles disappear from time to time. Th greatest losses are noted in the items of bed linen, ward clothin utilized by patients, and small objects such as steel tape measures scissors, scalpels, probes, and spoons.

These shortages appear from various reasons. Some of the article are accidentally thrown out in the garbage cans, others are appropri- ated for personal use by patients and employees, some are mislaid or get into out-of-the-way places where they are overlooked, and i a still smaller number of cases, the article may be so badly soiled tha it is destroyed. Equipment may also be taken from the ward in a perfectly legitimate way and never returned, such as a sheet used t cover a dead body.

It appears to be impossible to get either the patients or personne to handle Government property as carefully as they would their own— at least without several years of special training. Many experienced Government employees have acquired a sort of sixth sense about constantly being on the lookout to prevent these shortages, and such personnel are very valuable to a post.

New members of the force may seek to hide or destroy damaged articles to conceal their own carelessness, not realizing at first that worn-out equipment, broken crockery and the like must be turned in to the matériel officer so that suitable credit may be received. The correction of this natural tendency requires special effort on the part of those in charge of the ward.

The regulations make the nurse equally responsible with the ward surgeon for the care of the property intrusted to them. This is a very reasonable provision, because the nurse actually has the hand- ling of the equipment and comes very much more constantly in con- tact with it than does the medical officer. Reference has already been made to obtaining a receipt from the patients for the clothing issued. This is a very valuable practice in ward management, making the patient more careful and enabling the nurse to keep a record of the articles that have been supplied to each man. Having been given an outfit, the patient should be required in every case to present the soiled article before a clean one is issued.

All linen should be counted before it is sent out to the laundry and recounted when it is returned. It is, of course, imperative that bed linen, clothing, and all small articles should be kept under lock and key at all times. It has been a matter of great surprise that so few of the personnel, expecially the chief nurses, appear to realize that thefts of soiled linen will occur just as readily as the removal of the freshly laundered pieces. In almost every hospital one will note that the clean linen is carefully safeguarded, whereas the dirty articles are placed in some sort of a receptacle out of sight, where anyone can help himself to them freely. Indeed, the location at times would almost appear to have been especially selected so that thievery is made convenient and temptation put in the way of the unscrupulous.

After having carefully provided that all the property which lends itself to this type of control is locked up, the next best measure to prevent loss is to take frequent inventories. The regulations require that this be done once a month, and the physical count should actually be made at least this often. If the property is not checked for four or five months, large shortages may occur and a continual leak might go on which otherwise would be corrected. If the items are counted frequently and the ward surgeons actually make a report of their overages and shortages at a meeting of all the members of the staff responsible for equipment, a great deal of the property which has strayed from its proper location can be found and returned to the officer who is responsible for it. Strange as it may seem, even bulky articles such as beds and tables and step ladders, disappear from their proper places and have to be returned at periodic intervals. Strict rules should be enforced that whenever anything is borrowed from a ward in an emergency a receipt shall be given, and these receipts shall be carefully kept until the transferred article has been returned.

It is always wise to restrict the equipment on the ward to the lowest possible point at which it can function successfully. When there is an excessive amount of supplies available, losses are very much more likely to occur than if the equipment is just adequate for the needs of the unit. Provision should be made whereby worn-out or badly stained linen may be exchanged for a new supply without too elaborate paper transaction. The same procedure should be available for other nonexpendable articles required in the operation of the section.

Wheeled Vehicles.—It is customary to supply the wards with wheeled food carriages, stretchers, and a supply of wheeled chairs. Experience has shown that equipment of this type does a great deal of damage to the woodwork, due to the fact that somewhere, most frequently on the axle, there is a projecting point which strikes against the doorways, woodwork, or walls from time to time when the cart is in use. This constant repetition of small blows always at the same

height eventually produces great damage both to paint and the material beneath. In a hotel which was used as a hospital, about $30,000 worth of damage was effected in this manner during the four years in which it was in use as such.

Orderlies very frequently deliberately permit loaded food conveyors to strike against a wall as a means of checking them, rather than put forth the muscular effort necessary to bring them to a stop. The solution of this problem, which is really a serious one, is to limit the number of wheeled appliances permitted on the ward to the lowest possible number. It may make a little extra work for the attendants but it is very much better to provide baskets than carts for the conveyance of linens and a great many other objects.

If wheeled transportation of some sort is absolutely essential, it is an excellent plan to provide special bumpers on all projecting parts; for instance, a line of hose can be run around the edge of a wheeled stretcher and a pad of rubber may be fastened over the projecting hub of a wheeled chair or food carriage, the material salvaged from a discarded automobile tire being excellent for the above-named uses.

Appearance of the Ward—*Pictures.*—Usually hospital wards present a bare and rather unattractive appearance. Lately the plan of placing a few pictures on the walls has been tried and appears to be a good idea. Such pictures should be rather carefully selected, however, and hung in appropriate places.

Patients will inevitably display colored calendars, gaudy lithographs, and similar examples of alleged art. An absolute rule must be enforced against this practice or the ward will in time suggest the appearance of a low-grade barber shop.

Beds.—All bedsteads should be kept on a true line and properly spaced. The beds should be well made, and the counterpanes should be changed as soon as they are crumpled, soiled, stained, or ragged.

Window shades.—All shades should be placed at an appropriate and equal height. It may be of interest in passing to state that this detail has always been carefully attended to by every nurse with whom the writer has come in contact. It seems to be a point upon which they have all had special training.

Lockers.—If high lockers are supplied for clothing, patients should not be permitted to place any objects on the top of the locker, and they should all be required to keep bedside stands and lockers, inside and out, in an orderly condition.

Clocks.—A clock on the wall where it can be seen by all is a great convenience, and acts in a certain sense of the word as "company" for the patients.

Flowers.—Cut flowers are a great attraction to any living place. Frequently gifts of flowers will be received from various sources, and provision should be made for keeping on hand a supply of cheap glass vases to preserve such gifts.

Ash trays.—It is very essential to provide each patient, especially those who are permitted to smoke in bed, with some kind of receptacle for their ashes, burnt matches, and small articles of trash which accumulate constantly where men are being housed. Small receptacles are practically useless for this purpose, and it has been found that earthen flower pot saucers about 9 inches in diameter are very satisfactory. These saucers are cheap and hold a considerable quantity of smokers' débris. A pipe may be tapped against them without their upsetting and the original expense is low. If desired, these containers may be painted any appropriate color. Small metallic ash trays which are frequently given away as advertisements are absolutely inadequate for use on a bedside stand.

Matches.—It is usually desirable to furnish the patients with safety matches rather than have them buy the cheaper and more dangerous varieties.

Windows.—The windows should be washed frequently enough to keep them clean. This will vary with the weather conditions, and it is not practicable to set any fixed intervals.

Floors.—The floors should be swept up as often as necessary. Lint will usually accumulate on the floor during the process of making the beds, so one sweeping must be put into effect immediately after the beds have been made. Here again the work must be done as often as required rather than at a fixed interval, and the rule should be that as soon as a floor is noticeably soiled, it must be cleaned whether this is every 30 minutes or twice a day.

Detailed instructions for caring for floors of different sorts will be found on page 187.

Annexes to ward.—Special care must be given to policing the bathrooms, lavatories, and smoking rooms, as more débris accumulates in these annexes than in the ward proper. The head nurse should visit these localities at least once an hour and inspect them. It is a good plan to have her make entries on her nurse's daybook as to just what time the bathrooms and toilets were examined. This will enable the ward surgeon or chief nurse to check up her visits. Cleanliness and good order in these spots will always cause favorable comment, while their lack will bring much criticism. It may seem strange, but in the course of their ordinary training nurses do not appear to be specially drilled in these details. In Public Health Service hospitals, however, it is absolutely essential that they should learn how to become good housekeepers and devote enough of their time and energy to this very important part of ward management so as to keep the ward and its annexes in a presentable condition.

Bed pans.—Bed pans, urinals, and the like are usually kept in suitable racks located in the bathrooms and toilets. However, if it is found that when placed in these secluded spots they are not properly

cared for, the plan may be adopted of keeping them in some more conspicuous place where inspection is more easily accomplished.

Chemical cleansers.—Ward employees will always clamor for various chemical detergents and odorous disinfectants which they fondly believe can be used as a substitute for elbow grease. These powerful chemicals are very often destructive to paint and other articles of equipment, and should never be issued. There is no real need for chloride of lime and other odorous disinfectants, if the bathrooms and similar places are kept in a proper condition of cleanliness. If the urinals and bed pans are washed out adequately, no deodorant will be required. If they have gotten into bad condition, a little compound cresol solution may be necessary to assist the preliminary cleaning process; but when these utensils are well cared for, no chemicals other than soap and water and proper care will ever be required.

Diet kitchens.—A great help toward the appearance of the diet kitchens is to have the dishes, cups, platters, tumblers, and other articles of equipment placed on the shelves or tables in orderly rows and always in the same place. The knives and forks should be kept separate and stacked in order in the drawers provided for that purpose. Each article should have its place and be kept there when not actually in use. When necessary, nails, hooks or other similar appliances should be provided on which to hang egg beaters, can openers, or other instruments which should be cared for in this manner.

Brass articles and trim.—A little bright metal work around the ward will add much to its attractiveness. If brass cuspidors are used, they should be kept highly polished. The same is true of brass doorknobs or brass doorplates. If articles of this sort can not be kept up to the required standard of brightness, it is much better to paint them over with some appropriate flat color.

Cracked ice.—Considerable ice is always required on a hospital ward. Some of it is used in ice bags or for chilling water used in giving cold sponges. The other great demand is for preparing lemonades and similar drinks.

It is objectionable both from esthetic and sanitary standpoints to have the attendants going to food refrigerators to obtain ice for cold baths or ice bags; hence, for external application, ice should be kept in a special receptacle when practicable.

The cracking of ice in the diet kitchens always leads to considerable sloppiness on the floors, and a better plan is to have the ice broken up in a crusher and distributed to the wards. Refrigerators can now be obtained with a special drawer for holding a generous supply of crushed ice. This method of handling this material is convenient, clean, and economical.

Issuing of janitor supplies.—Usually there is considerable waste of soap, cleaning powders, brass polish, and the like on the wards.

While this is a minor matter, nevertheless economy is desirable here as in all other divisions of institutional management. The issue of all cleaning materials in stated amounts, either weekly or biweekly, will be found advantageous.

In determining the quantities to be furnished, experience should be the guide, the minimum amount capable of producing results should be ascertained, and the attendants should be instructed that this quantity must suffice for the period indicated.

Another method is to furnish the chief nurse with a monthly supply of cleaning materials and have her issue them out to the individual workers in small quantities as required, carefully checking up the amount of work performed with the materials consumed.

In line with the husbanding of supplies is the proper preservation of such articles as brooms, scrub brushes, and mops. Mops are sometimes discarded before they are worn out, because they have become malodorous or stained, or for other insufficient reason. This practice can be controlled by requiring the old mops to be turned in to the matériel officer for inspection before new ones are issued.

Uniforms for orderlies.—Orderlies make an attractive appearance when clothed in white jackets and white trousers; however, they must do a good deal of cleaning up, and white clothing is preeminently unsuitable for this occupation.

Blue denim overalls will be found very useful for wear in the morning when the varied janitor duties are being performed, and the white suits may be worn in the afternoons after the rough work is done.

VERMIN

Roaches.—The two varieties of roaches most commonly found in this country are the German cockroach (*Blattella germanica*) usually called the croton bug, and the American roach (*Periplaneta americana*) or the large black flying roach.

The Croton Bug.—The croton bug does not fly and is considerably smaller than the true American roach. It derives its name from the fact that its presence became quite noticeable in this country about the time the Croton water system was introduced in New York City. Roaches are fortunately of rather slow development as compared with other insects. The croton bug requires from five to six months to reach full maturity, and the large roach about twice that period. Wherever there is wood and plumbing, croton bugs are very likely to appear. They are especially likely to infest ice boxes, kitchen sinks, and the regions thereabout. When they have once gained a foothold their eradication is a matter of considerable difficulty, especially in old buildings with wooden floors and washboards.

Prevention.—The best method to prevent the appearance of vermin of this sort is absolute cleanliness and the meticulous removal of all

particles of food, even the tiniest crumb, as what especially attracts them is heat and dampness, combined with refuse of this sort. The feet of refrigerators, diet cupboards and similar containers may be placed in saucers filled with oil. Such articles of course should be pushed sufficiently away from the wall to prevent the bugs from gaining access to them by that route. All garbage cans and similar containers should be taken out of the ward immediately after the evening meal has been cleaned away.

These pests often hide in peculiar locations, especially under paper linings of drawers, behind loose boards and in the cracks and crevices of tables, walls and old woodwork; hence the elimination of as many of these places of security as possible should be carefully studied. Cracks may be closed by plaster of Paris, putty, or similar fillers.

Remedies—Powders.—Of all the chemicals recommended for the destruction of roaches, sodium fluoride has proved by careful tests to be the best. It may be used undiluted or mixed with corn meal, cornstarch, flour, or some inert substance such as plaster of Paris. The powder is liberally sprayed where the insects frequent, especially in places where they are known to hide. It should be dusted on the edges of the baseboards, behind cabinets, sinks, or shelving and in similar localities. It should be understood that as a usual thing the roaches do not eat the poison directly, but get it either on their bodies or feet. They are rather cleanly insects, and in licking the poison off their extremities they ingest it; hence from 24 to 48 hours are required to obtain results.

The writer has used the following mixture with success:

	Parts by volume		Parts by volume
Sodium fluoride	3	Flour	
Cocoa powder	2	Pulverized sugar	

Another method is to wet pieces of stale bread in milk, pour on a little sirup, dust on the sodium fluoride, and set out small quantities on pieces of cardboard in the places where the roaches congregate at night.

Borax.—Borax is possibly the next best remedy after sodium fluoride. It is used in practically the same way and may be mixed with chocolate (1 to 3), flour, or inert substances.

Pyrethrum powder.—Pyrethrum powder is fairly effective, provided it is used in large quantities and the drug is obtained fresh. Many of the roaches may only be stupefied and should be collected and burned.

Liquids.—Certain liquids composed chiefly of light hydrocarbon oils, with various chemicals added thereto to increase their toxicity, are on the market to be used as sprays. This form of treatment, however, is expensive and may be dangerous as a fire risk, and should

be used only when the infestation is very severe, so that the spray may be thrown directly on the insects as they scurry around when boxes or cabinets are moved from their usual localities.

Gaseous disinfection.—Sulphur gas is effective against cockroaches when used in the proportion of one pound to every 1,000 cubic feet. Time of exposure, four to eight hours. This gas is corrosive to all metallic objects, and, furthermore, it bleaches many fabrics; hence its use is ordinarily restricted to outbuildings or rooms which are not elaborately furnished. At best it is not very satisfactory.

Cyanogen chloride gas.—Cyanogen chloride gas is extremely effective against cockroaches and also destroys the eggs; sulphur fumes do not. This gas requires so many special precautions in its use and production, however, that it is to be considered as a means of getting rid of roaches only under special conditions.[2]

Pyrethrum fumes.—The fumes resulting from the burning of pyrethrum powder have been used as an insecticide and are fairly effective.

Manual destruction.—It will usually be found that croton bugs come out at night when the kitchens or other rooms are dark or deserted, and a visit after dark with a sudden turning on of the light may reveal them in large quantities scurrying in every direction. An effective method of extermination is to kill them with a heavy fly swatter at such a time.

Large cockroaches.—The habits of the large cockroaches are essentially those of the croton bug, and methods of control are practically the same, except that trapping can be utilized.

Trapping.—Where the roaches are very numerous, various forms of traps may be tried. The trap consisting in brief of some sort of a container into which the roaches are induced to enter and from which they can not escape. Any deep vessel or can with smooth sides may be used. One or two inches of some fluid, such as stale near beer, may be placed in the container.[3] Sticks are inclined against the edge of the can from the floor so that the roaches may crawl up on them, and having gotten to the top many of them will fall into the receptacle and are unable to escape because they can not climb up the smooth sides. Number 10 tin cans for holding canned goods make excellent traps if the tops and sides are cut off so that the can is about 4 inches deep. The inside and bottom are then liberally greased with butter and a few tongue depressers are placed against the edges. Roaches which get into these cans, seeking the butter, will be unable to crawl out and may be destroyed each morning by throwing them into boiling water or on a fire. The trap may be

[2] See Appendix, p. 270, for full instructions for the use of this gas mixture.

[3] Sirup makes an excellent bait.

used several times without regreasing. Trapping is not effectiv against croton bugs.

Eradication difficult.—It is oftentimes reported that there is som newly discovered powder or preparation which some other institu tion simply scatters around with a minium amount of effort on th part of the employees, which immediately causes the complete dis appearance of all vermin of this sort. Unfortunately these result have apparently always been obtained at some other hospital an the preparations thus far tried have not the magical powers whic have been so loudly proclaimed. The nursing and janitor force ma be safely assured that there is no royal road to success in this wor of eradication, and that an infestation with water bugs can be ove come only *by work of the hardest sort,* combined with a very grea supply of patience. An officer of the Public Health Service ha aptly said: "It might be stated with conviction that, while complet eradication is difficult, the degree of success attained will reflec accurately the zeal, assiduity, and intelligence with which th employees devote themselves to the task."

The secret of the extermination of vermin of this sort from a war may be summarized as follows:

1. The removal of absolutely every particle of food stuff, especiall crumbs on the floor, which the roaches might consume.

2. The storing of such edibles as must be kept on the ward i bug-proof containers or in cupboards or refrigerators which have thei feet placed in saucers filled with oil.

3. The abolition of all places in which the insects may concea themselves.

4. The continued and intelligent use of approved roach powder which should be dusted and allowed to remain wherever the roache frequent, especially on the bottom of drawers, around sinks and sin boards, behind wainscoting, etc.

5. The persistent and patient effort in killing the bugs by manua methods. The night force should be supplied with fly swatters an should wage continual warfare on every specimen which venture into the open. Water bugs are tenacious of life and oftentimes whe knocked down and apparently dead, will later revive; hence all stunne or crippled ones should be promptly burned.

Encouragement toward faithful effort in the work of eradicatio may be supplied by giving extra time off to those employees whos work produces the desired result.

6. Finally, it appears that cockroaches, like the poor, will be always with us; hence the fight against them must be kept up *ever lastingly* every day of the year as long as the infestation remains.

Bedbug—*Life history.*—The eggs of bedbugs are deposited in cracks and crevices where the adults conceal themselves. They hatch

n from 7 to 10 days ordinarily, but cold may prolong the period of ncubation to three weeks or longer. The developing bugs shed their kins five times at intervals of about a week. Ordinarily it takes even weeks for the cycle from the laying of the eggs to the develop- nent of the adult bug ready to lay eggs. Unfavorable conditions, uch as cold and lack of food, may prolong the life cycle considerably. The eggs are deposited frequently, and one individual may produce ver 190 eggs. Bedbugs usually feed at night on human blood, and est for from 6 to 10 days after each meal. ("The Bedbug." By C. L. Marlatt. Farmer's Bulletin 754, U. S. Department of Agriculture.)

The destruction of bedbugs once in a while becomes necessary in nost institutions. Usually but one bed is infested, as it is difficult o imagine any modern hospital permitting such a condition of affairs o continue long enough to allow the insects to become lodged in the alls or other parts of the buildings. When these pests have gotten nto a bed, the best plan is to take the bedstead and bedding out of oors. If a steam chamber is available, steaming the bed clothing nd mattress will effectively dispose of the vermin in these articles.

Ordinary kerosene is one of the most effective agents, not only for ne destruction of bedbugs, but also of their eggs. Hence infested edsteads may be liberally treated with this agent. It may be ap- lied with a swab or spray, and allowed to run freely in holes or racks, the excess being wiped off afterwards. The springs and iron arts of beds may be treated with a blowtorch.

Strong solutions of carbolic acid and bichloride of mercury may also e utilized on bedsteads and in cracks around baseboards, door ames, in the floors, walls, etc. (acid carbolic 30, $HgCl_2$ 30, alcohol ,000).

Turpentine is quite effective for a similar purpose. It may be iluted with gasoline or alcohol. It dissolves paint, however.

If the mattress can not be steamed, it should be carefully gone over y hand with a whisk broom, special attention being paid to all the eams and tucking, as the insects may hide or deposit their eggs in nese places.

Carbon tetrachloride is very efficient, and it is nonexplosive, leaves o stains, and promptly disappears. The vapor is somewhat toxic; nd if any amount of it is used, it should be employed out of doors. mixture of two parts of carbon tetrachloride and one of gasoline is ot inflammable and considerably less dangerous than gasoline alone. his combination may be used on mattresses and in other places here kerosene is contraindicated.

If the bugs have secured lodging in the walls or other parts of the uilding, their removal becomes a matter of considerable difficulty. umigation with cyanogen chloride gas [4] is extremely effective, but

[4] For detailed instructions concerning the method of preparation and precautions to be used when em- oying this agent, see page 270 of the appendix.

this procedure must be very carefully carried out on account of th deadly nature of the chemical used. Repapering and repaintin with a liberal application of some approved insecticide to all crack and crevices, may be necessary when all other measures fail.

It should be remembered that occasionally these insects will estab lish themselves not in a bed but in some nearby location, travelin some considerable distance at night to reach the sleepers. This shoul be borne in mind where bites are noticed, but the vermin themselve can not be located in the mattress or bedstead.

Moths.—Moths may do a great deal of damage in institution especially those composed wholly or in part of old buildings. Woole materials of all sorts are frequently attacked, especially rugs, carpet blankets, and personal clothing. If once a building has becom thoroughly infested, the complete eradication of moths is a ver difficult matter, and serious losses may result from time to time Reference has been made previously to the necessity of seeing tha the clothing of patients stored in the baggage room is not attacked b these marauders. The flying moth, or miller, does no harm itself but lays its eggs on suitable material. From the egg, in four to eigh days in warm weather, and from two to three weeks in cold weather is hatched a tiny worm, and the worm feeds freely on wool, fur, hair or feathers, when it can reach them.

Remedies.—The frequent brushing, cleaning, and airing of clothe is an important measure to prevent the larvæ from getting an oppor tunity to damage the material. Garments which are free from moth eggs or larvæ may be absolutely protected from damage by tying them up in tight cotton bags. These bags prevent the ingress of flying moths or millers, and hence protect the clothing. The careful wrap ping of the articles in several thicknesses of newspapers is of grea protection.

For the fumigation of a single closet, carbon tetrachloride is a suit able agent. It should be used at the rate of 1 pound to every 10 cubic feet of space and allowed to evaporate in a shallow dish placed high in the closet, as the gas is very heavy. The space must be tightly sealed. While carbon tetrachloride is nonexplosive, its fumes are about as dangerous to life as the vapor of chloroform; hence all closets thus treated must be well aired and the room thoroughly ventilated before the latter is again occupied. One or more upholstered articles may be placed in the closet and treated in the way described.

Rugs and carpets, when infested, should be sent to the dry cleaner and the cracks in the floor treated with kerosene or carbon tetrachlo ride. As in other forms of vermin control, precautionary measures to prevent the ingress of the pest are very much more important than methods of eradication after it has become established.

All old worn-out articles of wool, fur, or feathers should be discarded immediately and not allowed to accumulate in large quantities. Clothing found to be infested with moths should be destroyed at once; but if this is not practicable it should be thoroughly treated to remove the undesirable occupants. In endeavoring to overcome the moth nuisance it must be remembered that many articles apparently composed of moth-proof material have certain parts which contain wool or hair and form harboring places for moths, such as the lining of old leather gloves, common bristle dust brushes, and many similar objects.

A mixture of equal parts of gasoline and carbon tetrachloride is extremely effective in destroying moth larvæ and can be applied to many fabrics without injury to the same. This combination is much less inflammable than gasoline alone and also more effective.

Naphthalene.—Naphthalene is the white crystalline substance, either in flakes or in balls, sold in drug stores as "moth balls." When used in generous amounts it destroys the moths and protects the article with which it is in contact. Naphthalene is fairly volatile and the fumes, if tightly confined, are fatal to these insects. About 1 pound of the flakes well distributed in an ordinary trunk are required to secure the above protection. If scattered in open boxes or bureau drawers, naphthalene can not be expected to be very effective. The containers should be fairly tight, and this can be accomplished by sealing up all cracks with pieces of gummed paper.

Camphor is also effective, but not as efficient as naphthalene. It has the advantage of not having the same disagreeable odor. As it is similar to moth balls, it should be tightly contained and about 1 pound used to each 5 cubic feet of space.

Cedar chests, when fresh and tightly constructed, are quite useful, but may not kill the larvæ or moths if they are well developed at the time the clothes are placed in the chest.

Dry cleaning is quite effective in killing moths, and articles coming from the dry cleaner may be considered as being in a suitable condition to be placed in bags, cedar chests, or other containers.

Where the building is old and contains much infested upholstered furniture or carpets, or closets which are full of moths, a general fumigation may be necessary. For this purpose nothing is so useful as the cyanogen-chloride gas mixture. Using this agent, the building must be closed for 4 to 24 hours, and great care exercised on account of the very poisonous nature of the gas.[5]

Lice.—Patients are occasionally admitted whose body and clothing may be infested with lice, and the method of handling the clothing becomes something of a problem. If a steam chamber is available,

[5] See page 270 of the appendix.

the steaming of the affected articles is the most effective method o killing both the eggs and lice themselves. Plunging the clothes into boiling water is also satisfactory. If it is desired not to damage the clothing, the articles may be placed in a clean, galvanized ash can and 75 cubic centimeters of carbon tetrachloride thrown on a large Turkish towel or bunch of rags placed on top. The can is then covered with its lid and allowed to remain undisturbed for two hours. The heavy vapor from the carbon tetrachloride will fill the lower part of the can and kill all living lice in this time of exposure. This method is extremely simple to carry out and does not injure the clothing to the slightest degree. It has the disadvantage of not killing the eggs, however. After having been exposed to carbon-tetrachloride vapor the clothing should be well aired several hours before being worn. Where beds or floors are infested, spraying with kerosene will be found to be very effective.

Flies.—With adequate screening, the fly nuisance is usually very easy to abate. However, a certain number of flies may gain access to wards and kitchens, often entering at the time the doors are open, especially when taking the food carriages in and out.

The destruction of flies in the diet kitchens is best accomplished by the diligent use of the fly swatter, although sticky fly paper and certain poisons serve their purpose.

For further instructions concerning the use of such agencies, see page 140.

Ants.—Various varieties of ants at times may gain access to hospital wards or kitchens and become a serious problem.

Prevention.—Ants are attracted into buildings for the purpose of securing food, and the proper cleaning up of all crumbs and the like that fall on the floor and the keeping of all food supplies in insect-proof containers are the best means of avoiding such an invasion.

Remedies.—These insects frequently make their nests in the woodwork or walls; and if the nest can be discovered, the occupants may be destroyed by pouring a liberal supply of boiling hot water over the area or pouring carbon disulphide into the channels leading to the nest, or kerosene if its use is practicable. Sodium fluoride, borax, and fresh pyrethrum powder are useful.

Ants may be trapped by the use of sponges which have been sprinkled with sweetened water. After a large number are collected, the sponges are thrown into boiling water and the trap reset. At times, however, this method of destruction appears to invite more ants, on account of the food supply furnished them, than are destroyed. A better method is to use a poison bait, such as syrup containing sodium arsenate, the formula for which will be found on page 268 of the appendix.

When the ants are especially troublesome it may be best to have all ice boxes, food cabinets, tables, and the like protected by having their legs placed in saucers containing a little kerosene or mineral oil.

As in all other forms of vermin, absolute cleanliness is essential in keeping this unwelcome visitor out of the institution.

Fleas.—In some districts fleas frequently invade human habitations. There seems to be a difference of opinion as to whether the dog or cat flea bites human beings. The flea eggs usually accumulate in the beds of domestic animals or on the floors where they frequent. When the eggs hatch, the larvæ live on almost any kind of organic matter. Sometimes in going into deserted houses it will be found that they are infested with fleas. Usually, these are animal fleas and *do not attack* human beings, although they may swarm over the legs and trousers.

Remedies.—After a number of fleas have gotten into a house, one of the very best methods of getting rid of them is to remove all carpets and rugs and to mop the bare floors lightly with kerosene. Sticky fly paper placed around beds may be helpful, as the insects have a tendency to jump toward anything white. They become entangled in woolen fabrics, and if they are on personal clothing they can sometimes be gotten rid of by undressing while standing on a blanket spread out on the floor, shaking each garment as it is taken off. Fresh pyrethrum powder is quite helpful and may be dusted into beds before being occupied. Spirit of camphor also is a repellant.

Mosquitos.—In the South the exclusion of mosquitos from all living apartments is in many places a very important sanitary measure. Window and door screens must be kept in good repair, and the mesh of the screen must be of sufficient fineness to prevent the mosquitos from passing through.

The destruction of all breeding places on the hospital grounds and in the vicinity is here of the utmost importance and should be carefully looked after, the usual means of prevention, such as putting oil on collections of water and drainage, where practicable, being carried out.

Mosquito bars.—In certain districts, the use of mosquito bars for each bed is essential. If the mosquitos are particularly troublesome, it is highly important that the bar be properly tucked in around the bed. The correct method of doing this is as follows:

The upper sheet or other covering is tucked in only at the bottom and the two sides of this sheet folded toward the center of the bed in the shape of a V, with the apex pointed toward the pillow. The mosquito bar is then carefully tucked in from the outside at the head, the far side, and the foot. The open side of the bar where the sleeper enters, is tucked in as well as may be before the occupant gets inside of the bar, after which he tucks in the remaining portion. By this

method the upper covering of the bed may be moved by the motions of the sleeper without pulling the bar loose from the mattress, as will inevitably be the case if an attempt is made to tuck in the bar when the bed is prepared in the usual way.

Mice.—Not infrequently mice make their appearance in the diet kitchens, and it is well to have mousetraps included in ward equipment for emergencies of this sort. The scrupulous removal of all foodstuffs, especially crumbs, accompanied with the use of traps, will usually rid the wards of this nuisance.

STORAGE OF X-RAY FILMS

The modern cellulose acetate safety film is about as inflammable as pasteboard and should be handled accordingly.

Nitrated Cellulose Films.[6]—The nitrated cellulose film has a chemical composition very similar to smokeless powder, in so far as the central part is concerned, and is a highly dangerous substance from the standpoint both of fire and explosion.

Films of this sort can be ignited at fairly low temperatures by having an electric-light bulb in direct contact with them, the glowing end of a cigarette, or long continued heat over 125° C. They burn with a flame and also with a flameless type of combustion and in the process of decomposition give off gases which are both *explosive* and *inflammable.*

Among the different gases which are generated are two very *toxic* vapors—*carbon monoxide* and *nitrous fumes.*

A number of explosions with several severe disasters resulting in a high death rate are on record from accidental ignition of stored X-ray films, and great precautions should be taken in handling material of this sort in the hospital.

If the nonsafety type of film is used, the storehouse for the same should be composed of brick with a sufficient vent, of at least 140 square inches cross section for each 1,000 pounds of films, opening freely into the outer air, and the vault should be equipped with a fireproof door. The storeroom should preferably not be located in the basement. It should not be heated by high pressure steam and the electric lights should be located well away from the films, with no plug-in receptacles, and an automatic sprinkler system of good capacity should be provided.

As small a number of films as possible should be kept in the hospital proper, and these should be carefully protected in metal containers from the dangers of fire, incident to smoking, electric-light bulbs, sunlight, steam pipes, and the like.

[6] The use of this type of film or its storage in Public Health Service hospitals has been prohibited for several years.

It can usually be arranged that only a few films necessary for the proper treatment of patients actually in the institution need be kept in the building. As soon as possible all nonsafety films should be filed in the special storehouse provided for that purpose.

A great deal of valuable information on this subject will be found in the "Proceedings of a board of the Chemical Warfare Service, appointed for the purpose of investigating conditions incident to the disaster at the Cleveland Hospital Clinic, Cleveland, Ohio, on May 15, 1929."

STORAGE OF THERAPEUTIC COMPRESSED GASES

So much compressed gas is being utilized in hospital work that some comment on the method of caring for such supplies seems to be pertinent.

Checking.—The cylinders should be carefully weighed as soon as received, as the pressure is an unreliable method of checking the contents of the tank. The record of the weight should be carefully preserved. Care should be taken to use the old cylinders first, for obvious reasons.

Storage of compressed gases.—Nitrous oxide, oxygen, and carbon dioxide may be kept in ordinary storerooms, away from combustible material, but should be under lock and key so that unauthorized persons may not have access to them. The room should be dry and the cylinders not exposed to heat either from stoves or sunlight.

Ethylene gas is inflammable and explosive when mixed with certain percentages of air; hence should be stored in a special compartment with an opening to the outside air so that in case of leakage the gas may escape. Care should be taken that open flames or any apparatus which might give forth a spark, such as electric switches or other forms of electric apparatus, are not brought into or used in the compartment in which the ethylene gas is kept.

GENERAL ECONOMIES IN HOSPITAL PRACTICE

Medical Supplies.—From actual experience, the writer believes that the tendency in most hospitals is not to give enough medicines; but keeping this principal in mind, considerable economy may be secured by the proper practice in prescribing. The mild silver salts should always be used in fresh solutions, and the amount furnished should be carefully graduated to the quantity which will actually be required. For eye drops, 4 cubic centimeters is adequate; and for throat sprays, 25 cubic centimeters is sufficient.

It is convenient to have the pharmacist place the required amount of the silver salt in empty 5 and 25 cubic centimeter bottles and cork them. These bottles are kept on the wards and in the dispensary and

out-patient office. When the medicine is required, the proper amount of water is added, the mixture shaken, and the solution is then ready for use. The preparation of large quantities of solutions of mild silver salts for future use is bad practice and wasteful.

It has been noted that at times four or five hypodermic tablets are prescribed to be taken by mouth at one dose where an ordinary pill would save some expense. This is especially true of codeine. Very few physicians realize that codeine is an expensive drug. To secure the desired effect it must be given in large doses; and if the patient is given four ½-grain hypodermic tablets, the cost per dose would be about 12 cents, and probably one-twelfth grain of morphine would be no more habit-forming and just as satisfactory in every way. The advantages of codeine over morphine are rather more imaginary than real in many instances.

Epinephrin is another expensive drug which is sometimes prescribed and used in an extravagant manner for nasal douches.

Surgical Supplies.—In most hospitals there is an opportunity to effect considerable saving in gauze, which is always an important item of expense. Supplies of gauze are kept on hand in many parts of the institution, and its constant availability is very likely to result in its being used for many purposes for which it was never intended. Pieces of gauze are frequently utilized as handkerchiefs, sanitary napkins, to clean spots from clothing, to wrap up miscellaneous articles, and whenever a handful of soft absorbable material is required. The abuse of gauze in this way is difficult to control, but is best prevented by constantly providing satisfactory substitutes which are less expensive.

In its legitimate field surgical gauze is at times wasted by applying dressings which are thicker and more extensive than required. Most surgeons feel that they would sooner err on the side of safety in the protection of a wound, and this attitude is, of course, easily understood. However, a certain amount of judgment should be exercised in determining what amount is required. Large quantities of perfectly good material are discarded every day in doing new dressings. Some of the loss can easily be avoided by using the outer unsoiled portions a second time. This can usually be done with perfect safety, provided the surgical staff desire to carry out this policy.

The *reclaiming* of soiled gauze is a matter concerning which there is considerable difference of opinion, but the subject may be summarized as follows:

(1) It is entirely practicable to reclaim used gauze, clean it, and sterilize it so that it is perfectly safe as dressing material.

(2) When the work is properly done the reclaimed gauze is soft, absorbent, and in many instances preferred to the new.

(3) The process of reclaiming gauze is an elaborate one and as now performed requires a large amount of hand labor.

(4) The statements in regard to the cost of reclaiming must be very carefully studied to insure that all the necessary factors have been included. The tendency in making reports along these lines appears to be to underestimate the expense.

From the above it is plain that the actual economy in reclaiming gauze will depend entirely upon the conditions which prevail at the institution where the process is attempted. If it is practicable to have convalescent patients or employees who have a certain amount of leisure time furnish the manual labor for the project, a very worthwhile saving may be accomplished. On the other hand, it may be definitely stated that if it is necessary to hire labor for this purpose, it will probably cost as much to reclaim the dressings as it will to buy new material.

Sometimes, however, a middle course is practicable, and an institution may save the outer and unsoiled dressings from clean cases, have them laundered in a laundry bag, extracted, dried in the bag in the tumbler, returned to the surgical department where they are sterilized in mass and then used for various purposes. Gauze so treated is soft, resembles stockinet somewhat, and is loosely wadded together. It makes an excellent dressing for frank pus cases, such as chancroids and buboes and for catching gonorrheal discharges. It is also useful for "wipes," so called, in other parts of the institution. As there is no hand labor involved in this procedure, the method is economical and the material salvaged saves the use of considerable new gauze.

Another excellent plan is to cut pieces of gauze 5 yards long. These are then made into rolls and sterilized. The gauze rolls are used without cutting for wet dressings of various sorts and afterwards sent to the laundry, where they are soaked in a 2 per cent compound creolin solution over night, then thoroughly rinsed, and finally they are washed and run through the mangle. The handling of pieces of gauze of this size is not difficult, and the material after being brought to the institution is again sterilized and used. The entire process can be repeated a number of times. Worn out Turkish towels can also be utilized in the same way and reclaimed in the same manner. Both of these systems are in successful operation in the Chicago Marine Hospital.

The cutting and folding of gauze in the *correct sizes and shapes* for the dressings is most important and one of the most practicable means of accomplishing a saving in this item.

Ligatures.—Ordinary care will result in a certain amount of economy in the use of ligatures, but this should not be carried so far as to produce more irritation than the saving is worth.

Adhesive plaster.—Adhesive plaster is much more expensive than most of the hospital personnel imagine and is often used in unwarranted quantities. Many internes apply bandages unskillfully and then insure their retention by an unlimited use of adhesive. Their professional pride should tend to correct this careless practice.

Bandages.—The ordinary gauze roller bandage is a considerable item in the cost of surgical dressings. It may many times be profitably replaced by other methods of securing the dressings to the body.

Dressings can be held in place very satisfactorily on the head by means of caps or bonnets made out of light material and fastened with string under the chin. Such a cap is also an excellent means of retaining a mastoid dressing. Dressings on the back and chest may often be held in place by pinning them to the undershirt, pinning up the slack of the shirt on both sides. Similar dressings in the groin may be attached to the drawers or B. V. D's.

Dressings on the thigh and leg, especially wet dressings which have to be removed often, are best held in place by a many-tailed bandage, which seems to have fallen in almost total disuse in American hospitals, except for abdominal dressings.

The many-tailed bandage may be made from a piece of bleached or unbleached muslin, flannelette, or similar material wide enough to cover the dressings and long enough to go comfortably around the part and tie. This bandage is also most convenient in keeping on certain types of splints, as it can be loosened or adjusted at any point as often as desired with a minimum amount of disturbance to the parts. This method of holding dressings is economical, because the many-tailed bandage is not cut when the dressings are changed, and may be used repeatedly.

Fuel.—In northern climates fuel is an important item in the expense of hospital maintenance, and considerable saving may be effected by conservation of heat in the wards, corridors, and other parts of the building. Further reference on this subject will be found on page 65 under the heading of "Ventilation of wards."

Light.—Proper control of the use of electric lights will materially diminish the bills for electricity in many institutions and is well worth the attention of those in authority.

Ration.—The possibility of accomplishing savings in subsistence is discussed in the chapter on "Dietetics" on page 135.

A few of the more important lines along which desirable economies in hospital practice may be accomplished have been briefly enumerated above merely as suggestions. Every attempt should be made to prevent waste and save expense when it can be done without sacrificing efficiency, comfort, or quality of service. No item is too small not to be worth while or to be beneath the dignity of the consideration of the executive head of the institution. However, all proposed

economies should be scrutinized with great care to be certain that the saving is not more apparent than real. As a general thing one may safely assert that cheap supplies and a poor grade of materials are really expensive in the long run. As an example may be quoted thin wooden tongue depressors, which are so fragile that two have to be used together in order to obtain sufficient stiffness to hold down the tongue.

No special mention has been made in this section concerning the necessity of keeping the number of employees strictly within the required limits, as the matter seems too obvious to require comment. Reference to the need of careful supervision of requests for additional employees and the tendency to let down in the amount of work performed will be found on page 9.

The best opportunities offered really to effect savings are in the following:

(1) Prevention of waste.
(2) Selection of the proper grade of materials and instruments.
(3) The buying of hospital supplies and equipment in such quantities and under such conditions as to secure the lowest prices.

Securing Cooperation in Attempts at Economy.—The chief incentive to practice economy in our private expenditures is the prospect of devoting the funds thus saved to future personal use. This same principal may be utilized in securing the cooperation of a hospital personnel in a campaign looking toward economy. The persons most vitally concerned—that is, the medical staff, nurses, heads of divisions, orderlies, etc.—should be called together and the program fully discussed. It should be made clear that money saved can be utilized in securing various desirable things. (See p. 19.)

Concrete examples are always useful and make a strong mental impression. The exhibition of a discarded but slightly soiled dressing composed of one or more roller bandages and a number of yards of gauze, with an accurately prepared statement of the actual cost of these articles, which may go as high as 40 cents, will be illuminating and helpful.

Dollars and cents have a very powerful appeal to most people, and the explanation of what can be done in the way of securing increased equipment or the like with money thus obtained is likely to bear fruit.

Checking up Ward Property.—Every ward should have an individual property return which is signed conjointly by the ward surgeon and nurse. It is essential that the property on the various wards be counted at least once a month and checked against these returns. Various changes in the items listed take place, from time to time, on account of turning in worn-out articles and receiving new ones.

A record of these transactions is kept on appropriate slips, which are furnished the wards, but for the convenience of all concerned, the matériel officer should bring the ward returns up to date at the beginning of each month so that the responsible officer may have a correct and clean list as to just what he is charged with when he is making his monthly count. The necessary bookkeeping transactions involved in taking off the pink credit slips and adding the blue debit slips should be done in the matériel officer's office.

The blue and pink slips are retained on the ward until the corrected sheets are received to be used in case disputes arise in regard to whether or not the property has been delivered.

After the monthly counts have been made, which counts should in each case show all *shortages* and *overages*, responsible officers should have a meeting and should distribute among themselves at this time all surplus property which may be required to make up losses. Nurses and doctors should clearly understand that surplus property which may have been found on their wards has in every case been signed for by some other officer or nurse and should be returned to the proper owner at this monthly adjustment meeting. If they attempt to accumulate overages for possible future shortages they are merely creating a loss in some other ward which has to be sworn off by the responsible employees. This fact must be repeatedly explained and emphasized to secure the full cooperation of all concerned.

It is often diffcult to identify various surgical instruments on the return of the operating room. It will be found helpful, in this connection, to cut out pictures from various surgical catalogues of the instruments listed, and to paste them in a book or on sheets of cardboard over appropriate titles, in the order in which they appear on the list. By consulting such pictures even an inexperienced nurse will be able rapidly to check up the return.

Keeping the Hospital Register Correct.—There is sometimes considerable difficulty in checking up the number of patients actually in the hospital. To those unfamiliar with the subject, this may seem almost unbelievable, but there are various reasons why this condition at times prevails. Patients may be admitted at all hours of the night, and under conditions which disturb the ordinary routine of the institution. It is entirely possible for such a patient not to be picked up by the registrar for a day or two after admission. The greatest difficulty arises, however, with patients who are absent without leave or who have been granted a furlough without notifying the registrar, and, for one reason or another, it will be found that it is necessary to adopt a very rigid system of securing reports from each ward every morning, in order that the register may be carefully checked up on the irregular admissions and discharges.

After the trial of a number of systems, the following blank has been found as effective as any which have been proposed. Special attention is invited to the fact that the count is taken as existing at exactly midnight, and that the number of *patients actually on the ward* at that moment is to be given in all cases, and that there is a distinction between the number of *men on the ward* and the number *carried on the ward record.*

WARD _____ DAILY WARD REPORT FOR THE 24 HOURS ENDING AT MIDNIGHT _____

Number of patients actually on ward from last report _____

Number of patients admitted _____

Number returning from absence _____

Total _____

Number of patients discharged _____

Number beginning absence to-day _____

Total discharged and beginning O. L. and A. W. O. L _____

Number of patients actually on ward _____

Number of beds actually on ward _____

PATIENTS ADMITTED TO HOSPITAL	PATIENTS DISCHARGED
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

PATIENTS ADMITTED BY TRANSFER	PATIENTS DISCHARGED BY TRANSFER
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Names of patients on leave or away without leave; also information concerning change of status of patients on leave and away without leave.

_____ _____

_____ _____

Total number of patients carried on ward records _____

_____

(Nurse)

CHAPTER IV

DEPARTMENT OF DIETETICS

General Observation.—No division in the hospital can be said t exceed in importance the dietetics department. Good food, wel prepared and attractively served, is as essential to the treatment o many patients as medicine or other forms of therapy. In fact, in cer tain types of disease, such as tuberculosis, and during the con valescence of the transmissible fevers, the furnishing of prope nourishment does more to effect recovery than any system of drugs

The nurses, orderlies, and medical staff comprise that part of th personnel which comes in closest contact with the patients. It i essential that they should be kept in a happy and contended conditio not only for their own sakes but on account of the sick who will suffe or profit according to the moods of those around them. It is easy t see, then, how the morale of the whole institution can be affected b conditions in the dining room. Poor food is the cause of more dis content, grumbling, and inefficient service than any other one iten in the station routine. In fact, many civilian hospitals are notorious for furnishing what has been characterized as "institution fare," which is only another way of saying that the food is badly prepared without sufficient variety, and unattractive in every way.

During the past 10 years a great improvement has been observe in the quality of meals furnished in restaurants and hotels in thi country, and hospitals have for the most part shared in this better ment. In fact, it will be noted that much more time and thought ar now being devoted to the matter of the commissary in all public institutions.

Why the Food is Frequently Poor.—Ordinarily the food purchased is of fair quality, but by the time it reaches the consumer it is often most unpalatable. The culinary errors most frequently committed are:

(1) Cooking the food too long.
(2) Improper seasoning of the food.
(3) Allowing the food to stand for too long a period after it has been cooked, so that it is dried out and the savor has departed.
(4) Serving food cold which should be hot, and vice versa.

As a result of this mismanagement often very good material is placed on the table in a very unappetizing form; very little of it is eaten, dissatisfaction reigns, and money has been wasted. There are many reasons why hospitals have difficulties in providing a good table. Good cooks are scarce, and very often the wages they are able to command make it difficult for the hospital to compete with hotels, clubs, and similar organizations for their services. Furthermore, the officers who have to deal with the handling of the kitchen employees, the purchasing of supplies, and the drawing up of menus, are often insufficiently trained and inadequately paid, all of which means that the service will be poor.

It is not at all pleasant to be continually receiving complaints either from the patients or the personnel in regard to what is being served in the dining room; hence it will amply repay the medical officer in charge to devote sufficient of his time to this phase of hospital management to assure himself that everything is being done that can possibly be accomplished.

Organization—*Chief dietitian.*—In marine hospitals the dietetics department is usually in charge of a chief dietitian, who draws up the menus, orders the supplies, inspects the same on delivery, and has general supervision over the mess halls, dining rooms, kitchen, and food storehouses, unless the latter are in charge of a matériel officer. Under her supervision also are prepared the special diets.

The chief dietitian, having many duties in a hospital of any size, must have sufficient executive help. This may consist of one or more junior dietitians or trustworthy women who have had practical training in the handling of food and kitchen employees, and oftentimes a storekeeper.

Hours for meals.—The hours for meals will naturally vary in different institutions. It is often wise to consider whether or not the hours in force are in reality the best for the comfort and convenience of all concerned.

In so far as patients are concerned, usually the heavy meal or dinner is given at noon. There are various reasons for this arrangement; one of them is that it permits the kitchen force to finish their work earlier in the evening; another is that, usually, sick persons do better with a lighter meal at the close of the day than with a heavy meal at that time.

Ward patients are required to go to bed at a regular hour, and therefore are awake early in the morning, and breakfast for them will come correspondingly early.

Officers and nurses enjoy their heavy meal best in the evening at 6 or 6.30, after the day's work is done, and when practicable their wishes in this respect should be complied with. However, in many

small hospitals it would cause unnecessary burdens upon the kitchen force to give the patients their dinner at noon and the personnel another dinner in the evening.

The breakfast for patients is usually served at 7 a. m., necessitating the opening of the kitchen at 6 a. m. Supper for the personnel is generally put on the table at about 5.30 p. m., so that the mess hall is not ready for closure in the evening until 7 p. m. This means that the dietitian's department must be covered by some one in authority, capable of handling emergencies, from 6 in the morning until 7 in the evening. Failure to have breakfast ready at the appointed hour because the cooks have not reported for duty, or on account of some difficulty in issuing supplies, is in hospital management a real catastrophe, and every precaution must be taken to have some one on duty to handle these contingencies.

In the purchasing of supplies for various Public Health Service hospitals, the chief dietitian may expend anywhere from $25,000 to $100,000 a year. If this employee is able to save even 5 per cent of this amount by careful management, it is easy to appreciate that her position is important, and hence great care should be exercised in the selection and training of the person occupying this position.

The medical officer in charge should confer with the dietitian frequently and give her department that share of his personal attention which it so clearly deserves.

Physical requirements of employees.—The physical requirements for this division are approximately the same as those in other departments of the hospital. No one should be accepted who is suffering with a venereal disease or a disfiguring skin eruption. All the personnel who actually handle food should be examined to determine whether or not they are typhoid carriers, and all should be vaccinated against smallpox. These details should be fully explained to the employee before he is appointed, and no one put on duty unless he has agreed to comply with the requirements.

Number of personnel.—The total number of personnel required for the dietetic department will depend first of all upon the bed capacity of the hospital. However, no definite ratio of employees for this department, as contrasted with the number of patients, and applicable to all institutions, can be established. Much will depend upon the arrangement of the buildings, the type of patients, and the quality of the help secured.

Usually there will be a main dining room for ambulatory patients, a personnel dining room in the South, a dining room for colored patients, a dining room for venereal disease cases, and possibly other separate mess units, such as the nurses' home, and there may be a separate dining room for colored personnel. Where the buildings are widely scattered, the labor of supplying these different units where

food is served will naturally be greater than if the institution is very compactly assembled. The efficiency of the employees who may be obtained varies in different parts of the country; hence this factor must also be considered in any attempt to compare the forces of two different stations.

In checking one institution of 170 beds it was found that the dietetics department contained the following personnel:

1 chief dietitian.	1 chief cook.
1 assistant dietitian.	1 assistant chief cook.
1 storekeeper.	2 second cooks.
7 waitresses.	4 kitchen helpers.

These employees constituted 18 per cent of the total personnel, and the salaries paid to this division amounted to 11½ per cent of the total salaries paid. These statistics were compared with other hospitals and were found to be about the average, and they may therefore be of some use in determining whether the amount of labor in this department is under or above the ordinary requirements.

Supplies.—(1) *Ordering.*—When buying on the open market, it is advantageous for the chief dietitian to have various dealers submit informal prices on Monday morning for the week beginning on that day. All things being equal, the orders are placed for that period with the dealer giving the lowest figures.

Salesmen should always be encouraged to come to the station, present their samples, and quote prices, in order that the purchasing agent may know what prices are current in that vicinity and obtain the lowest. On this account, it is advisable to distribute the orders among as many firms as is practicable, in order to secure their interest and competition. If it is understood that the hospital buys all its supplies from one firm, usually other salesmen will not offer prices, and the dealer who feels he has the trade is very likely to go up on his figures from time to time because competition is not feared.

Purchasing agents are only human, and may at times permit other considerations than price and quality to govern to a certain extent the selection of the firms to whom they give the hospital business; and the medical officer should exercise sufficient supervision over the purchase of the food supplies to insure that the dealers are being treated fairly and that one is not being favored over another on account of the personality of the salesman or the friendship which the employee who gives the orders may feel for the members of any particular firm.

In buying supplies good judgment as to the amount to be ordered at one time is very essential. Frequently, apparently attractive prices are offered if large amounts are taken, and the chief dietitian is under the temptation to overstock because of the seemingly splendid bar-

gains to be secured. Attempts to save money in this way will as often result in failure as success.

It is not believed that Public Health Service purchasing agents should be expected or permitted to attempt to forecast the market conditions. Supplies should be bought in sufficient quantity to secure wholesale rates, but any attempt to purchase beyond current needs should be discouraged. In one institution a large amount of fancy canned goods was purchased, as it was believed that the cost of these articles would increase considerably during the winter on account of the shortness of the crops. The expected increase, however, occurred only to a slight degree; but when the funds of the institution became limited and relief was sought by drawing on the supplies already on hand, it was found that they were of a very expensive grade and suitable for use only in desserts and on special occasions. As a result, although approximately $2,000 worth of this material was in the storeroom, it was practicable to use but $100 worth a month, so that by the time the entire quantity was consumed the price had again dropped to the original figure, and a considerable sum had been tied up uselessly for over a year.

Because of the above considerations it is wise for the medical officer in charge to issue instructions to the chief dietitian that orders for canned goods, preserves, condiments, pickles, and any other items purchased in excess of current needs shall in all instances be approved by him before the final order is issued. Under this system, however, the dietitian is permitted to buy without any formal check the articles needed for immediate consumption, such as meats, fish, fresh fruits and vegetables, eggs, butter, cream, etc., as it would be scarcely practicable for the officer in charge to devote sufficient time personally to supervise the purchase of such foodstuffs.

The plan of having the dietitian go to the markets each day and personally make her purchases is often considered to be the proper one. However, in practice it does not work out. A housewife can go to the stores and, if she is experienced, buy the supplies for a single family to great advantage. This can not be done for an institution, however. The dietitian can not personally inspect all the cantaloupes, chickens, or heads of lettuce which are to be purchased, as does the housewife. The amounts purchased make such a course absolutely out of the question. Nevertheless, about once a week the dietitian should make a visit to the markets in order to see what is being offered at that time and to get some idea of the quality and price of the fruits and vegetables then on sale.

The method of distributing food among the retailers in vogue to-day automatically results in its being divided into various grades. The wholesale commission men examine the products passing through their houses very carefully and price and grade them accordingly.

The various retail dealers buy in range with the class of customers which they serve. Thus a continuous process of selection is constantly going on as the foodstuffs are distributed through the channels of trade to the consumer.

Having learned which dealers carry the grade of food desired and which ones can be depended upon, the orders may be placed without actually inspecting the product. It is always understood that if anything which is not up to the required standard is delivered, it will be returned.

(2) *Receipt of supplies.*—When supplies are received at the station from the dealers, they must be carefully checked off with the invoices to see that the proper amounts are actually delivered. Suitable scales should be provided in a convenient place, and all meats, butter, cheese, fish, and similar articles reweighed in each instance.

(3) *Caring for food.*—Every hospital of any size requires a storeroom for food which can be kept under lock and key. Suitable bins should be provided for the housing of vegetables in a proper condition, and also refrigerators or cold-storage facilities for the preserving of milk, butter, eggs, meats, etc. All of these depositories must be so protected as to insure the contents against pilfering. Care must be taken that certain articles, especially bananas and cantaloupes, are not placed in storage with milk or butter, as the odor of the fruit will impart an unpleasant flavor to such foodstuffs.

When cold storage is available, the compartment for meats, fish, etc., is usually kept at an even temperature of 33° F. to 34° F. The space for milk, butter, and eggs is usually maintained at from 34° F. to 36° F., and the vegetable box at from 36° F. to 40° F.

(4) *Issuing supplies.*—Supplies are usually issued to the kitchen on requisition signed by the chief cook, or one of the assistants to the dietitian may make out the requisitions if the cook is not capable of doing this himself, which frequently is the case. Supplies to the wards are issued on requisition signed by the ward surgeons.

Various practices prevail about issuing supplies to the wards. It is customary to keep in the diet kitchen small quantities of sugar, butter, condiments, tea, cocoa, and sometimes bread and crackers. In some hospitals sufficient of these articles is sent along with every meal; in others a supply is issued from day to day to the wards, and small stores are kept there as above described.

When supplies are issued from the storeroom, records must be kept of the daily amounts. A complete record should always be available, so that the total amount of supplies received and the amount issued any month can be quickly determined. At the end of the month an inventory is taken at the storeroom and the various records are checked off against it to determine whether or not food has disappeared without having been accounted for. A stock card placed

on the shelves is very useful to assist in these inventories. It is needless to say that the keys of the storeroom should be very carefully guarded to prevent unauthorized use.

It is always advisable in large establishments from time to time to check up the total issued against the total receipts to detect any shortages either through dishonesty or carelessness. For example it is said that in a large institution the storekeeper who weighed in the meat was in collusion with the contractor. He would give the dealer a receipt for 800 pounds of beef when he received but 600 pounds. This meat was reissued to the various messes, who carefully weighed what they received, as they were charged with the same. However, no check was made to see that the amounts reissued corresponded with the amounts received in the main supply room, and as a result this dishonesty had gone on for a number of months before it was detected. In other words, it is always advisable to see that the hospital is actually using as much as it is being charged for by the contractor.

Purchasing Subsistence Under Contract.—All Public Health Service hospitals are now purchasing subsistence under contract. The advantages of the contract are that real competition is secured and lower prices are generally obtained than when buying on the open market. An incidental benefit is that the time of the purchasing agent is greatly conserved by escaping repeated calls on the part of the various salesmen who desire to present real or imaginary bargains, all of whom have to be interviewed in order to determine whether or not the institution has an opportunity of effecting a saving. The greatest problem encountered in buying food on contract is the difficulty in drawing up specifications for certain articles of foodstuffs in such a way that the bidders will know exactly what is wanted and the hospital will be able to compel the contractor to furnish the grade of article desired.

In purchasing on contract it is always essential that all deliveries be carefully examined to see that they come up to the required standard. The need of inspection is very much greater than when buying on the open market. In the latter case the dealer knows that if he supplies an inferior article that further orders will not be given him, whereas the contractor must be given business until his service becomes so poor that there are sufficient grounds to cancel his agreement. As the canceling of a contract requires a good deal of correspondence and annoyance, and usually results in much ill-will, the buyer is likely to put up with a great deal of unsatisfactory service before taking this drastic step.

Getting out proposals.—Before the bureau will issue authority to obtain proposals for subsistence it will be necessary to send to Washington a schedule enumerating what foodstuffs will be required and

give the estimated amounts which will be consumed. In getting up this schedule, on which the proposals are to be based, it is very important not to leave out articles which may be needed. A book should always be kept by the dietitian in which are entered the items which experience shows are required, but which have not been placed on the previous schedule. The bureau will allow a different class of articles in the winter and holiday season from that which will be authorized in the summer, and vice versa.

Before making purchases of subsistence it must always be remembered that due notice must be given of the fact of advertising and that whenever practicable competitive proposals should be secured. The proposals should be prepared so as to purchase in lots or quantities suitable for institutional use. This will usually include both large packages and small. It may be advantageous also to specify several grades of a given article, as for example, eggs, one sort for cooking and another for table use. The same is true of canned fruits, some of which are to be used for pies, others to be served alone. It is permissible to buy only the article specified; if the contract calls for beef by the quarter, the dietitian can not order rib roast under this heading. Therefore all the various cuts of meats which it is believed will be needed must be particularly specified, such as sirloin steak, rib roast, beef tongue, as well as beef by the quarter or half.

Purchase of beef entirely by the quarter or half will rarely in the end prove economical, although the price per pound is cheaper. It is not often that the proportion of various cuts secured in this way will adapt themselves to the need of the hospital, and usually a larger amount of round steak or undesirable meat is obtained than is required. This has to be utilized in the way of ground beef, hash, Hamburg steak, soup meat, etc., and is often partially wasted rather than really consumed. Therefore in drawing up proposals for meats it is always well to include all the individual cuts in addition to the halves and quarters.

Drawing up proposals.—In drawing up proposals, care must be exercised so that the exact type and quality of article desired are described and all necessary information is given, which includes the size of the containers, weights of contents, etc. Vague terms, such as "best quality," "strictly high grade," and similar terms, should be avoided.

The specifications must be worded so as to leave no doubt as to exactly what will be required. Standard specifications for some food articles can be obtained from the supply table. If the bidders themselves are consulted, they will often give valuable information regarding terms, although large firms often have their own terms for various grades which are not common among the trade in general and are useless for general specifications.

The greatest difficulty will be exercised in getting up suitabl specifications for fresh fruits, green vegetables, meats, fowl, an coffees. Fruits and vegetables should be bought by weight wheneve practicable. This practice is constantly coming into more commo use. By all means avoid terms such as "bunches" and "boxes' unless the weights or cubic contents are specified in connectio therewith.

In preparing the description of meats and fowl it is well to consul a number of local butchers and find the market terms used in tha vicinity for the various qualities.

In writing specifications for canned goods it must be remembere that there are some five or six grades recognized by the trade and th correct trade name used for the kind desired; also the size of the con tainer should be given in every instance.

Time for contracts to run.—When prices are fluctuating considerably no dealer can bid on subsistence supplies for prolonged periods withou either making prices so high that he is bound to be protected or run very great risk of losing by putting the price at the current marke rates. No advantage is ever obtained by having a bidder lose mone on a contract, because in such a case he may endeavor to substitute a inferior brand of goods to decrease his loss and continual frictio between himself and the purchasing agent is bound to result; henc the time for the contract to run should be gaged according to the con ditions of the market. Ordinarily, bread, milk, and groceries may b advantageously bought under a 3-months proposal. Meats at time may be properly purchased on the same plan; at others, however monthly proposals are quite long enough. Butter and eggs may b bought by the quarter or month according to market conditions Fresh vegetables are usually best purchased on a weekly or biweekl basis. In the case of certain items, such as rice, beans, coffee, tea etc., it should always be specified in the proposal that samples are t be furnished, and these samples should be marked and kept on han in order to compare with the articles delivered from time to time.

It can not be too often reiterated that extreme vigilence is necessar in checking up the quality of subsistence bought on contract, and mos especially the meats, fowl, fresh vegetables, and fruits.

Drawing up Menus.—The chief dietitian is required by regulation to prepare the menus sufficiently in advance to present them to th officer in charge for his approval. This is often neglected, but i should be done; and the proposed food schedules should be carefull examined and changed if improvements suggest themselves.

There are several cardinal rules which must be observed in drawin up menus, which may be listed as helps:

(1) Some institutions have a standard menu which is repeated ever week. The patients very quickly learn what to expect from day t

day, and know, for instance, that every Saturday night there will be baked beans and pork for supper. This is a very bad practice. The diet should be varied so that the patient never knows what to expect. There is one possible exception to this rule, and that is that it may be understood that on Sundays chicken and ice cream will be served. However, it is well to vary even this plan occasionally and not always to give chicken on Sundays, but to substitute some other sort of fowl if funds permit, such as turkey or duck.

(2) The same article of food should never be served under different forms at the same meal or on the same day. For example, mutton broth should not be provided if roast mutton or boiled mutton is to be the meat dish; instead serve the roast mutton one day and the mutton soup the next. Similarly, bean soup should not be offered at the same meal in which baked or boiled beans are included on the menu. One must scrutinize the food lists carefully to avoid the repetition of the same sort of material too frequently, as it is not uncommon to find that it has been planned to give sausage for breakfast, roast pork for dinner, and ham for supper. The repetition of pork in this manner is, of course, highly objectionable and should never be tolerated.

(3) Surprise dishes should be given when practicable. By this is meant that various rather unexpected items should appear on the menu from time to time. Most dietitians fall into the practice of furnishing certain dishes which they know are well liked and easily prepared, and thus monotony on the table is soon developed. From time to time articles not ordinarily used should be introduced into the approved list. As examples may be mentioned tripe, calf's head, pig's feet soused and pickled, pig's kidneys, salt mackerel, kippered herring, whole hominy, buttered noodles, stewed celery (outer stalks), fish chowder, corned-beef hash, sauerkraut, spare ribs, etc.

Card index of dishes.—It will be found of very great assistance if the dietitian will make out on individual cards the name of each article of food which the cooks can prepare and which have been found to be practicable. These cards should be filed under the various headings, as follows: Meats for breakfast; meats for dinner; meats for supper; fruits for breakfast; soups for dinner; soups for supper; desserts for dinner; desserts for supper, etc. In drawing up the menu, then, by turning over the cards, appropriate dishes will be automatically suggested without any mental effort, and those which have been used for the current week can be placed at the back of the file to avoid too frequent repetition. Without some system such as this, very often certain varieties of food will be forgotten and not appear on the menu for a long time, and in any event to attempt to draw up a menu purely from memory is a rather severe mental task, even to those most experienced.

Special diets.—The dietitians usually have considerable difficult in varying the special diets, especially liquid and soft diets, so as t prevent them from becoming monotonous to the patients whose foo is thus restricted for any considerable period of time. A list of th articles usually classified under these two headings, although n special classification is ever strictly accurate, may be useful in suggest ing dishes which would otherwise at times be forgotten or overlooked

Liquid diets

1. Albumen drinks.
2. Broths.
   - Hot—
     - Chicken.
     - Beef.
     - Lamb.
     - Clam.
   - Cold—(Iced broths, solidified with gelatin
     - Chicken.
     - Consommé.
     - Tomato.
     - Tomato juice.
3. Beef juice.
4. Cereal waters:
   - Barley.
   - Oatmeal.
   - Rice.
5. Coffee, hot or cold.
6. Soups (strained):
   - Pea.
   - Potato.
   - Tomato.
   - Oyster.
   - Clam.
   - Corn.
   - Vegetable.
7. Egg drinks.
   - Lemonade.
   - Orangeade.
   - Eggnog.
8. Fruit beverages:
   - Lemonade.
   - Orangeade.
   - Grape juice.
   - Loganberry juice.
9. Ice creams and ices.
10. Gruels (strained):
    - Cream of wheat.
    - Oatmeal.
    - Rice.
11. Milk:
    - Buttermilk.
    - Sweet milk.
    - Milk with gelatin.
    - Milk shakes.
    - Milk junket.
12. Fruit juice gelatin:
    - Orange.
    - Lemon.
    - Grape.
    - Wine.
13. Raw eggs:
    - Beaten up with sugar.
    - Seasoned with salt and pepper.
    - Served like a raw oyster with a little vinegar or lemon salt, and pepper.

While many of the articles named above are attractive to the taste, some of them have very little food value. The adding of egg albumen will do a great deal towards making some of these drinks more nourishing without interference with the palatability.

Egg albumen may be introduced into hot drinks provided the temperature is not permitted to exceed 180° F., at which point the albumen begins to solidify. It is especially desirable to add egg albumen to various broths named above and most of the soups and to the fruit beverages.

While the fruit beverages are usually relished and craved by the sick individual, if there is any tendency towards nausea they should be rigidly withheld, as usually the acidity in such cases ultimately aggravates the condition.

Cocoa and chocolate, hot and iced, are usually considered as a liquid diet, but they are rather difficult to digest and are so rich that, except in special cases, they seem out of place when thinking of a diet which should be nonirritating and easy of assimilation.

Milk is usually given first place in the liquid diet list; but considering the solidification which ensues when it meets the acid contents of the stomach, it is not a liquid food in the same sense of the word as are albumen water, fruit juices, or chicken broth.

Soft diets

1. All articles included in the liquid diets.
2. Milk toast.
3. Scalded crackers.
4. Bread and milk.
5. Water toast.
6. Cooked cereals, especially rice.
7. Soft custards, floating island.
8. Soft puddings, such as—
   - Arrowroot.
   - Rice.
   - Tapioca.
   - Bavarian creams.
   - Cornstarch.
   - Spanish cream.
   - Lemon mist.
   - Farina.
   - Iceland moss.
   - Gelatin desserts (not to include nuts).
9. Eggs, raw, poached, soft boiled, or coddled (for recipe for coddled eggs, see appendix.)
10. Raw oysters.

List of articles midway between soft diet and full diet:

- Baked potatoes.
- Sweetbreads.
- Broiled oysters.
- Creamed squabs.
- Creamed breast of young chicken.

Liver diet.—A diet containing a large amount of liver has been found very useful in pernicious anemia and secondary anemia. It is necessary to give large amounts of the liver, from 90 to 240 grams daily, and this quantity of one article soon becomes monotonous; hence every effort must be made to provide the liver cooked in various ways and appropriately disguised. The liver may be given in the form of calf's liver, pig's liver, chicken's liver, or beef liver. It has also been found that kidneys, such as lamb, pig, or veal apparently have properties similar to those of the liver, but to a lesser degree. A liver diet may be supplemented by red muscle meat of various sorts, including calf's heart and beef heart. Of these, at least 120 grams a day should be given.

With the liver and meat diet it has been found very important to give large quantities of fruits and vegetables. The fruits especially to be desired are fresh or canned peaches, apricots, oranges, straw-

berries, pineapple, raisins, prunes, cantaloupes, apples, pears, and the like. Among the vegetables especially helpful are lettuce, spinach, asparagus, tomatoes, onions, cauliflower, etc. Potatoes and fish are not recommended. It is well to keep down the amount of fats given as they may satiate the patient's appetite and result in a decreased intake of meat and liver. The liver may be given raw, ground finely, in orange juice, or cooked in various appetizing ways, such as fried, broiled, baked with macaroni, as liver sausage, or mixed with rice or bread crumbs and stuffed into peppers.

Some variety may be obtained by substituting chicken liver for beef liver, and there are many recipes for cooking chicken livers. In the case of a liver diet, liver soups and gravies made out of liver are not recommended, because they produce satiety while giving but a moderate amount of the desired essential item. For the same reason rich sauces obtained by boiling the liver should never be served with it. The addition of a large amount of attractive fruits to the diet to be eaten at the same time the liver is eaten, alternating between mouthfuls, will be very helpful in getting the patient to take the desired quantities.

Recently liver extracts and various powdered preparations obtained from liver are being introduced freely on the market. It is claimed that some of them are equally as efficacious as liver itself, and if this is true it will be found advantageous at times to substitute them for the real article.

Tonsillectomy diet.—Tonsillectomy is such a common operation that the selection of a proper diet during the period of convalesence has become quite an important hospital problem. The following suggestions may be useful:

The first day after operation, gelatin, ice cream, eggnog, orangeade, milk, or cocoa have been found most appropriate.

On the second day coddled eggs, gelatin desserts, ice cream, various soft puddings, and milk toast are indicated.

On the third day a soft diet such as mashed potatoes, custards, rice, soups such as tapioca, barley, and other demulcent liquids, cereals, soft-boiled eggs, and creamed oysters will probably be taken without too much discomfort. From this time on the regular diet may be gradually resumed.

Noodle soup has been recently recommended as especially suitable for tonsillectomy patients.

Method of preparing special diets.—The method of preparing the special diets varies in different institutions. Usually, there is a *special diet cook* who works directly under the supervision of the dietitians. This cook may operate in the main kitchen or in a special kitchen, according to the needs of the hospital. It is convenient to have a separate kitchen, but this may cause additional labor in dis-

tributing the diets, as the "specials" usually go out with the regular tray service.

A good woman cook can prepare the diets very satisfactorily after she has received some special instructions from the dietitians in regard to the salt-free foods and other necessary restrictions not usually understood by persons who have not had training in physiology. One of the assistant dietitians generally measures out the diets in which the portions must be accurately weighed, and she may actually prepare some of the dishes.

General Economy in Food Schedules.—It is not very difficult to draw up an attractive menu if there is no limit to the cost thereof, but the real test of a good dietitian is to furnish good and attractive meals at a reasonable expense. When it becomes necessary to curtail expenditures in the dietetics department there are certain items which should go first, among which may be enumerated olives, fancy pickles, fancy cheeses, cheese as a side dish, radishes, stalk celery, nuts and raisins, jams, and jellies. These should be properly classified as luxuries; they are more or less expensive and do not constitute a special course. They are often eaten unconsciously along with the meal and are not appreciated in correct proportion to the expense incurred, and most people do not miss them if they are not supplied.

In trying to economize one must remember that while the printed menu may appear to be very ample and attractive, nevertheless the food when actually placed on the table is likely to be something entirely different, due to poor quality or inferior methods of preparation or serving; in fact, it would appear that this is often the case.

In institutional work, allowance must always be made for individual idiosyncrasies; tastes vary a great deal, and the items offered must be sufficiently numerous to afford some choice. It is not well ever to contrast an institutional menu with what we eat in our own homes, for there the dishes are especially cooked according to our tastes and usually only those articles are served which are relished by the family. A much greater variety is necessary for hospital use. If one desires, in his own home, he may make a breakfast solely of griddle cakes, but such a meal, so limited in its scope, should never be served in an institution, even if the caloric value is sufficiently high to answer the theoretical requirements.

It is also well to bear in mind when considering menus and calories that it is only the food which is eaten and absorbed which should be counted, and not that which is put on the table. However, it may be safely said that if the meals are ordinarily ample as measured by American standards the calories will take care of themselves.

In Public Health Service hospitals at the present time it is the custom to furnish practically the same menu to all persons fed by the institution. This has its advantage in that if any complaint is made

by the patients they can be informed that the same food is being furnished to the staff. However, as a matter of fact, the medical staff and nurses often really require food of a little different type than that furnished the patients, because they stay for prolonged periods in the insitution, are not getting much fresh air or exercise, and their appetites suffer accordingly. While the menus may be practically the same, slight variations for the personnel tables may be at times highly advantageous. Usually this will be the substitution of salads or the lighter dishes for the more substantial fare enjoyed by the ambulatory patients, some of whom are merely convalescing from injuries.

Analysis of the ration cost.—When, in spite of the usual economies, the cost of the ration exceeds the amount which is believed to be proper, it is necessary to take more drastic steps to reduce it. Very frequently the chief dietitian seems to be at a loss as to how to proceed in determining to just what the increase is due. On such occasions a careful analysis of the ration cost is absolutely essential. To accomplish this, some basis of comparison is helpful. It will be necessary to know the relative costs of the various important items in a standard ration, and then to compare the amounts actually spent for such items during the month with these standards, or if desired, a similar comparison may be made with the ration figures for like items of preceding months in the same institution when the ration cost was within reasonable limits.

For instance, in an average ration in our hospitals, costing in toto $0.674, the actual and the percentage of the cost of certain classifications of food was found to be as follows, per day:

Percentage cost of food items with a ration cost of 67.4 cents in a northern hospital

		Actual cost	Per cent cost of total ration
Meats		$0. 1792	26. 58
Vegetables:			
Dried	$0. 0046		
Canned	. 0582		
Fresh	. 0316		
		. 0944	14. 01
Fruits (including all fruit served on the table, used in desserts, etc.):			
Dried	. 0049		
Canned	. 0359		
Fresh	. 0201		
		. 0609	9. 03
Milk		. 0734	10. 89
Butter		. 0412	6. 11
Eggs		. 0430	6. 36
Buttermilk		. 0037	. 55

	Actual cost	Per cent cost of total ration
eam	$0. 0099	1. 47
ead, including flour, rolls, buns, crackers	. 0393	5. 83
reals, dry and cooked	. 0017	. 25
sserts, including gelatin, all sugar, cornstarch, flavoring extracts, tapioca, etc	. 0476	7. 06
ndiments, pickles and spices	. 0007	. 10
uxuries, including olives, cheese not cooked with macaroni, radishes, parsley, jams, bought sweet cookies, etc	. 0157	2. 36
verages (coffee, tea, cocoa)	. 0222	3. 29
iscellaneous	. 0411	6. 10
Total	. 674	100. 00

(NOTE.—No attempt was made to segregate in the above the amount of milk utter, etc., going into desserts, and all the items are added up strictly as listed.)

Cost of food items with a ration cost of 50.9 cents in a southern hospital

		Actual cost	Per cent cost of total ration
Meats		$0. 1317	25. 87
Vegetables:			
Dried	$0. 0372		
Canned	. 0335		
Fresh	. 0126		
		. 0833	16. 13
Fruits:			
Dried	. 0026		
Canned	. 0105		
Fresh	. 0211		
		. 0342	6. 84
Milk		. 0485	9. 53
Butter		. 0506	9. 93
Eggs		. 039	7. 65
Buttermilk		. 0004	. 09
Cream		. 0069	1. 35
Bread		. 179	3. 51
Cereals		. 0061	1. 19
Desserts (includes ice cream)		. 0289	5. 67
Condiments		. 0072	1. 44
Luxuries		. 0021	. 4
Beverages		. 0265	5. 21
Miscellaneous		. 0257	5. 19
Total		. 509	100. 00

(NOTE.—Observe how closely the percentage cost of the various articles checks up in these two institutions.)

When the ration is too high and an endeavor is being made to determine where the fault lies, the total amount spent for certain varieties of foodstuffs may be compared with the above table or with

previous months. The items first to be investigated as most likely to be concerned are meats, fruits, milk, butter and eggs, and canned goods. If, for example, the cost of eggs consumed during the month amounts to more than 6.36 per cent of the ration cost, the question would arise as to whether or not more eggs were being utilized than were necessary. However, an increase in the market price might explain a corresponding increase in this particular item. In the same manner, the amounts expended for the various items above enumerated may be checked month by month and any discrepancies found would account for the increased cost of the ration.

Avoid Expensive Methods of Packing.—The dietitian should realize that in almost all cases canned goods are more expensive than the same article if it can be purchased fresh or raw in bulk. The expense of the container and the preparation of the contents will inevitably be found in the retail price. For example, canned prunes are more expensive than dried prunes and canned sauerkraut, sweet potatoes, pumpkin, or pickles, than the fresh articles as purchased in the markets.

Summary of Ration Economy.—It is well to differentiate between mere reduction of cost and true economy. Economy should mean the obtaining of exactly equivalent results at less expense, whereas reduction of cost can easily be accomplished by cutting down on more or less essential things with a corresponding impairment in efficiency or change in the nature of value of the service rendered.

For example, the expense, in a Public Health Service hospital, of a breakfast composed of one-half an orange, dry cereal, two boiled eggs, toast, and coffee, will depend primarily on the first price paid for the articles listed above.

If a suitable grade of food has been selected, competitive proposals have been received from reliable bidders, and pains are taken to avoid waste, it is probable that no further reduction in cost can be obtained without the sacrifice of quality, with corresponding dissatisfaction of those who are fed.

Small and sour oranges might be furnished, stale eggs served, a cheaper brand of coffee substituted, and no cream supplied. Such reductions in cost can not be considered as economies, as they are simply the furnishing of inferior service.

Another method to cut down expenses would be to change certain articles on this menu, possibly substituting prunes for the oranges, rolled oats for dry cereal, and hash for the eggs. Such substitutions are so radical as completely to change the value of the breakfast as far as appeal to an impaired appetite is concerned.

Many institutions in endeavoring to cut down costs supply a menu which theoretically contains a sufficient protein content, but nevertheless in practice results in the consumption of an undue percentage

of carbohydrates, because the meats are scanty in amount and unattractive in quality. Persons fed on a diet of this description are likely to eat large amounts of bread, cereals, and vegetables, thus unconsciously making up for the deficient protein. It is not believed that hospitals should provide a ration of this kind for either their employees or patients.

There is a great deal of waste of edible fats in all institutions. This fat is usually purchased at the same price as the meat and a considerable percentage of it is not utilized. All plans to save fat and utilize it will therefore result in true economy. Along this line may be suggested the scrupulous saving of all bacon fat to be used in frying bacon, fish, croquettes, fritters when practicable, potatoes, and as a seasoning for spinach, cabbage, and greens. Beef fat may be utilized for suet puddings, and also for frying purposes generally. Waste fats for unsuitable consumption may be profitably converted into soap.

The writer strongly believes that attempts at ration economy should be limited chiefly to avoidance of waste and the buying in the most advantageous manner, rather than cut down the quality of materials utilized or sacrifice the desirability of the menu.

Substitute for canned goods.—The use of a certain amount of canned vegetables and fruits in winter is, of course, unavoidable. As no labor is required for their preparation, there is always a temptation to use them at other seasons in place of the fresh article. Given too frequently in the diet, however, they become monotonous and will give rise to a great deal of complaint. It is practicable in winter to avoid the use of too many canned products by replacing them with certain vegetables, such as turnips, parsnips, onions, cabbage, dried beans and peas, beets, and carrots, which should appear on the menus much oftener than they usually do during the cold season of the year.

Sample menus.—Sample weekly menus for every month in the year will be found in the appendix.

Cleanliness of the Mess Halls, Kitchens, Storerooms, Etc.—The highest standards of cleanliness should always prevail in these parts of a hospital, and the entire culinary department should be kept in such a condition as to be suitable for the inspection of visitors at any hour of the day or night. Kitchen ranges, hoods, and the like should be properly cleaned at frequent intervals to prevent the accumulation of grease. All copper utensils and nickel coffee urns should be kept bright and highly polished. Power-driven apparatus should be maintained free from rust and should be frequently painted. Special attention should be given to ice boxes and refrigerators to see that they are always in order, and that small amounts of food are not

allowed to remain until decomposition has set in. Containers for bread, sugar, flour, etc., should be made of metal, or lined with metal of some sort, and have tightly fitting lids to prevent the ingress of mice and insects. Canned goods and other supplies should be stored in an orderly arrangement on the shelves, and the floors should be frequently swept, as otherwise the crumbs of food will attract vermin of all sorts. Floors of the kitchens and dining rooms on which deposits of grease may fall must be scrubbed as often as necessary, and all parts of the dietetics department should be policed up wherever any disorder is noted.

Flies.—It need scarcely be mentioned that all dining rooms, kitchens, and mess halls should be adequately screened to prevent the entrance of flies. It is frequently advisable to erect a screened vestibule to the main entrance to the dining room so that there are two sets of doors to this entrance which is continually being used and likely to permit the admission of flies unless some extra precautions are taken.

Screening, poisoning, trapping.—Fly screens should be made of copper insect screen cloth with 16 meshes to the inch. In the South, 18-mesh screens are better, because they will keep out the smaller variety of mosquitoes. Sticky fly paper, which is composed of resin and castor oil, is helpful in catching flies which have gained admission to the various parts of the dietetic department. Formaldehyde is an effective fly poison and may be used by mixing it in the proportion of 2 per cent (about 3 teaspoonfuls to the pint) of formalin in sweetened water or milk. A pad of six or eight thicknesses of gauze may be placed in a saucer of the above solution, and a little sugar sprinkled on the gauze last of all. Another method is to fill a drinking glass with the sweetened formalin solution, place a saucer on the top and then quickly invert, raise the tumbler a little by inserting a match under the edge. This makes an automatic fly drinking fountain which fills as it evaporates and keeps the trap always set.

Fly traps are useful in certain localities and under some conditions. These may be bought on the market or constructed by the station carpenter. Directions for making such traps may be obtained from the United States Department of Agriculture. (See Farmers' Bulletin No. 734.)

Fly sprays are sometimes used, but are rather ineffective unless the infestation is very much more severe than one would expect to prevail in a modern hospital.

Plenty of fly swatters should be available and the dining room attendants should be instructed that all flies gaining admission must be disposed of. Flies may get into the dining rooms and kitchens, but there is no excuse of permitting them to remain there.

Prevention of fly breeding.—It is, of course, important that the fly nuisance be attacked at its source rather than merely to attempt to keep flies out of the house or to kill those which have gotten in in spite of all precautions. Fly prevention consists in the general care of the entire hospital reservation, more especially the handling of horse manure, which is one of the commonest sources of fly production.

If animals are kept on the reservation, every precaution must be taken to see that the manure is placed in fly-proof receptacles and not allowed to become a breeding ground. The same care must be used in the management of chicken yards, piggeries, and even garbage receptacles. If it is impossible properly to shield manure piles, certain substances may be added to kill the eggs and maggots, such as hellebore, powdered borax, and other chemicals.

Method of Preparation of Food.—The preparation of food is too comprehensive a subject to be fully discussed here, but there are certain important features which may be briefly taken up.

The cooks appear always to be anxious to begin their work as soon as possible, and more or less constant vigilance is required or the kitchen force will invariably prepare the food too far in advance and then keep it on the back of the stove until wanted. The very best food in the world may be spoiled if handled in this way. Of all faults experienced in hospital cooking, this is the one most commonly detected and the one from which institutional fare chiefly derives its opprobrium. The writer has actually seen fried fish which was to be served at 12.30 p. m. already cooked and on the back of the stove at 10.30 in the morning, where it was to remain until wanted two hours later. The same institution was cooking the chicken for the Sunday dinner on Saturday morning, and reheating it before serving on Sunday. There are a few foodstuffs which will stand prolonged cooking—sauerkraut and baked beans being among them. However, most vegetables are absolutely ruined by too long heating; preeminently in this class may be mentioned Irish potatoes (boiled, baked, or French fried); cauliflower, cabbage, asparagus especially, and onions. In many hotels and institutions, potatoes are usually unfit to be eaten when they appear on the table, due chiefly to overcooking or being allowed to stand after they have been prepared. If different sized potatoes are put in the pot together, the small ones will always be cooked too much. To avoid this, the potatoes should be sorted according to size, and no attempt should be made to cook large and small ones in the same container at the same time.

Most vegetables should be sorted according to size, and steamed; the flavor is very largely preserved by this method. Fixed rules should be established as to how long the different articles are to be cooked, and the kitchen force should not be allowed to put them in the steamers until the appropriate time before the meal.

In most hospitals food is started out to the wards about 11.30 to be served in the main dining room at 12 m. to the patients and to the personnel at 12.30. The food therefore should be divided into three batches and each batch put on the fire at a different time. Usually, however, they are all put on at the same hour, and as a result the ward patients get the meal while it is in the best condition and the personnel, who eat last, get it when it is by no means as good as when it was first cooked. Every effort should be made to avoid this method of handling food, even though considerable added work is involved thereby.

Proper Seasoning of Food.—With the type of cooks employed in Public Health Service hospitals it seems to be extremely difficult to have the food properly seasoned when it is cooked in quantity. No fixed recipes for such dishes as mashed potatoes, beef stew, soups, macaroni and cheese, rice pudding, coleslaw, salads, and the like are used. As a result, as the quantities of these dishes vary from time to time, it is practically impossible for them ever to be seasoned the same by the haphazard method which is adopted in adding the condiments.

There is a chain of popular restaurants in this country at which the cooking usually is very good. On investigation it was found that they have set recipes for the dishes similar to the ones mentioned above and prepare a definite quantity each day. All the ingredients are accurately measured, or weighed out down to the salt and pepper; this results in a uniform product at all times and in all the cities where their restaurants are located. If the demand is unusually heavy and the supply is used up, their customers are informed that the dish is exhausted, and there is no attempt to vary the amount cooked until the exact quantities of the various ingredients required can be carefully calculated. Some such plan is absolutely essential for all institutional cooking if good results are to be expected; otherwise the product will vary greatly from day to day and rarely be entirely satisfactory.

There are not a great many dishes, similar to those described above, ordinarily appearing on the hospital menu which require special formulæ to be followed exactly. It would not be very difficult for the dietitian to prepare a number of recipes for each dish on cards, each card containing the amounts of the ingredients properly worked out for a certain number of patients, one card for 150 persons, the next for 160, etc., increasing by tens up to the ordinary maximum capacity of the institution.

The card bearing the amounts of the various ingredients necessary to feed approximately the number of persons in the institution on any given day could be issued to the cook and returned to the file as soon as used.

All this would involve a certain amount of effort, but one should never expect to obtain good food without taking a great deal of trouble, and nothing is more important than having appetizing food to set before the patients and personnel.

Small Messes.—Where one woman prepares the food for a small number of individuals, say, about 20 at the maximum, the results are usually very much better than those obtaining in institutions. Hence dividing the various messes into smaller units will often improve the quality of the dietary. This is sometimes practicable for a certain class of patients, such as the tuberculous cases, and a separate mess for some divisions of the personnel, as the medical officers or the nurses, may be a decided improvement over feeding them all from one main kitchen, even if it is slightly more expensive.

Discussion of Some Special Classes of Foods (Coffee, Toast, Bread, and Butter).—While it may be impossible to serve some of the more complicated dishes, there is no reason why every institution should not furnish its personnel with good coffee, good bread and butter, and good toast.

Coffee.—In hotels, restaurants, and institutions, coffee is usually made in urns, by the process of withdrawing the fluid from the bottom into a large pitcher or bucket, and pouring it in at the top. The ground coffee is held in a coffee bag composed of muslin and supported by a ring at the upper part of the urn. This process of manual pouring seems to be extremely primitive, but apparently none of the mechanical devices to circulate the fluid have met with favor, and the hand method of percolating or dripping is the one almost invariably used for making coffee in large amounts.

To secure good coffee, the following points must be carefully observed:

(1) The coffee should be of good grade and freshly roasted.

(2) The beans should be finely ground. The degree of fineness should be about that of corn meal. If the grinding is carried too far the process of percolating is too slow, as the coffee forms in an impermeable mass in the bag. If it is too coarse only a part of the strength of the bean is extracted.

(3) Ground coffee can not be kept for more than 24 hours, unless hermetically sealed, without a considerable loss of strength; hence the coffee should be ground in the institution each day as required.

(4) The hot water must be poured over the coffee a sufficient number of times to extract the full strength. The entire volume of water should be drawn out and poured in at the top at least once or better twice.

(5) The beverage should be prepared only in such amounts as will be immediately consumed and should not be allowed to stand for an hour or longer in the urn.

(6) Sufficient coffee must be used to give a good flavor. Very weak coffee is usually very unpalatable. Most institutions use about 1 pound of ground berries to 2½ gallons of water. Sometimes it is made even weaker, the proportions of 1 pound to 3 gallons of water being used. This, however, is not recommended.

(7) The coffee urns must be kept scrupulously clean, and the bags should be washed out every day and thoroughly aired in the sun.

(8) After the coffee has been properly made, the grounds should not be allowed to drip into the prepared fluid, but the coffee bag should be removed.

Toast.—In the process of heating at certain temperatures, bread first becomes caramelized; if the heat is continued further, the outside layers become carbonized, or burnt. Toasting, then, is a process of caramelization and is quite distinct from charring or burning.

Good toast is a very delightful form of food; in fact, most people could enjoy a meal composed simply of good toast, butter, and good coffee. But excellent toast is rarely obtainable outside of the private home, as it is difficult to prepare in quantity and must be eaten the moment it is cooked, for standing will inevitably deprive it of all its attractive qualities. This means that the toast must be freshly prepared, just as it is wanted, which for a large institutional table is a very difficult problem. For ward use it is very much better to have an electric toaster in each diet kitchen and to toast the bread specially for each patient just before the tray goes out. Those patients whose appetites are capricious certainly are entitled to this service and the effort involved in giving them their food served in an attractive manner.

Bread and butter.—The thickness to which the bread is cut will depend upon the appetites of the consumers. For the personnel and tray cases, it should be cut thinner than when served in the main dining rooms. The butter should be of a good grade and free from objectionable taste and odor. Reference has already been made to the necessity of keeping bananas and cantaloupes out of the same containers in which the butter is stored. It has been found that most nurses seem to be unaware of the fact that bananas should not be placed near butter, and frequently a few bananas will be found in the ward refrigerator where the butter is kept.

Butter, besides being an easily digestible fat, contains a high vitamin content, and is therefore an important foodstuff. Unfortunately it is expensive, and it has been found that serving butter in small pieces is more economical than giving more liberal portions and that this practice avoids waste.

Grades of Flour.—The best flour for bread making is derived from hard red winter or hard red spring wheat. The percentage of protein contained in the flour is of considerable importance, because it affects

directly the fermentation properties of the dough. It is essential, then, that a baker work with a flour with a protein percentage to which he is accustomed, if he is to obtain the best results. It is customary in flour mills to mix different grades of wheat in order to secure the desired protein content.

Bread Making.—Some hospitals make their own bread, while others buy it from outside bakeries; and the latter plan seems best, unless there are some special reasons to the contrary.

Bread baking is a highly complicated and difficult art, requiring extremely careful selection of materials and scrupulous observation of the details of various processes through which the dough must pass before being turned into a finished product. Any faulty material or a slip in the technique will result in a poor quality of bread which ordinarily can not be discarded but must be utilized.

If the chief baker is ill, leaves suddenly, or neglects his duty, one of the principal foods of the institution is immediately seriously affected. Commercial plants can guard against contingencies of this sort much easier than the hospital; hence, as a general rule, it would seem advisable for institutions to purchase their bread and rolls from regular bakeries whenever it is practicable to do so. The maintenance of a modern hospital is sufficiently difficult at all times without adding thereto additional problems unless necessity requires it.

Usually it is advisable for an institution to run its own laundry, but the baking of bread, raising of vegetables, poultry, hogs, or the like, ordinarily adds unnecessarily to the duties of an already overburdened superintendent.

The above comments should not apply to certain special hospitals, as, for example, those located some distance from good markets and which have an abundant supply of labor which must be employed in some manner or other.

Cooking in the Ward.—When the appetite is especially poor and it is highly desirable to induce the patient to eat liberally, it has been found helpful to have a certain part of the food cooked in the ward diet kitchen. This simple cooking is usually done by an experienced orderly or by the nurse. The articles are prepared just as they are wanted and are served piping hot. Patients relish this sort of individual service very much, and often their personal preferences in regard to the methods of preparing the food can be observed.

Objections are usually made by the nursing force when this plan is proposed, but it is entirely practicable and has been very successfully carried out. In the case of patients who can not enjoy the meals as served from the general kitchen, the results of ward cooking are well worth the extra trouble involved.

It is not difficult to prepare the following articles in the ward diet kitchens: Toast, fried bacon, poached, scrambled, boiled, and fried

eggs, steaks, omelets, coffee, cocoa, canned soup, milk toast, oysters, etc.

Soups.—Well-made soups are relished by most people. They are easily prepared and should always have a prominent place on the menu, because frequently soup can be taken with relish when there is no appetite for other food. Lately it appears that the art of making soup has fallen somewhat into disuse, and many dietitians continually leave it off the menus because of the poor quality secured. This should be corrected, for there is no single variety of food of more importance to the sick.

Ice cream.—Ice cream has a wide field of usefulness in hospital practice; it is not difficult to prepare and is usually greatly enjoyed by all classes of patients and personnel. Suitable recipes may be obtained which afford a good product at a reasonable cost. A power-driven freezer should be in every hospital so that this favorite dessert may be always available.

A very attractive form of ice cream can be made from peppermint candy. This dish acquired great popularity at the Panama Pacific Exposition at San Francisco and a recipe for it will be found in the appendix.

The question frequently arises as to whether or not it is more economical for an institution to make its own ice cream or to buy it. No general answer can be given in such a case, for a great deal depends upon the local conditions under which the hospital is operating.

If the station has a power ice-cream freezer and capable cooks, there is no reason why it can not manufacture its own cream satisfactorily, for ice cream is comparatively simple to prepare and it is by no means difficult to produce a satisfactory article. However, on the other hand, if there is a shortage of labor in the culinary department, or if the help is inefficient, it may be more economical and satisfactory to purchase the frozen desserts from outside sources.

Some ice-cream manufacturers have worked out elaborate formulas and special methods of handling the mixtures so that they can produce a more pleasing product at a lower cost than can the individual producer. On the other hand, very frequently these cheap manufactured ice creams are flavored with imitation extracts and are not suitable for the sick.

A method of preserving manufactured ice cream by surrounding it with solidified carbon dioxide gas has been introduced. This new process makes the handling of the cream a very much simpler one than heretofore and gets rid of a great deal of the sloppiness and messiness which usually accompanies the ice-cream freezer and might be a potent argument for obtaining this article from the manufacturer.

It would seem, then, that each institution must by careful trial and study determine which is the better plan for its particular use.

Fresh vegetable substitutes.—In the winter season when fresh vegetables are scarce, some sort of substitute is highly desirable. Slices of canned pineapple dipped in flour and fried in butter make a very good vegetable substitute, especially when served with chops or steaks. Bananas also, cut in two lengthwise, dipped in flour and fried in butter, make an excellent accompaniment for any sort of meat. Fried apples can be utilized somewhat in the same way, either as a vegetable or dessert, and make a very pleasing change in the menu.

Cereals.—The use of the so-called "dry" cereals, while convenient, is nevertheless expensive. Portion for portion, it will be found that these prepared breakfast foods cost about three times as much as the ordinary oatmeal, hominy grits, and other uncooked grains. In view of the very limited food value afforded by the dry cereal, its use, if funds are low, seems to be highly unwarranted, as the other breakfast foods are much more nourishing, filling, and less expensive.

Milk.—Recently, there has been much propaganda in the press in regard to the consumption of milk, and many persons appear to believe that a quart of milk can be added with great advantage to the ordinary diet. While this is true for those individuals who are convalescing from some wasting disease or who are much below weight, nevertheless the addition of milk to a diet which is already ample for the needs of the consumer is absolutely unnecessary and likely to be harmful. It may be safely asserted that ordinarily anyone who is eating and digesting three good meals a day does not require milk in addition thereto. This is just as true of the personnel as it is of the patients. It has been found entirely practicable to conduct Public Health Service hospitals with an average consumption of slightly less than 1 pint of milk and 1 ounce of cream per day per person for both cooking and drinking purposes, including patients and personnel. Any increased consumption over this figure should be given careful attention in order to learn whether or not any waste is occurring.

Cream.—Cream should always be issued in individual containers for each person, because if it is placed on the table in a pitcher those who first come to the meal will be very likely to use a great deal more than their share, leaving others with a scant supply or causing undue consumption.

Cream substitutes.—A mixture of fresh milk (2 gallons), cream (1 gallon), and evaporated milk (1 gallon) will give a composition resembling cream, both in appearance and taste, but which costs only about half as much as the actual cream itself. This compound is for use in coffee and on cereals.

Extra Diets.—There will always be considerable discussion about the ordering of extra items and fruit for ward patients who are on the

regular diet. The signing of these orders is left in the hands o ward surgeons, but they are very prone to let the nurses make up th lists and to sign them without any actual supervision. The patient frequently ask for various special articles, and it is much easier t grant these requests than to refuse them. As a result, complaint i very often received that entirely too much extra food is being sen to the wards, and usually this complaint is well founded. Th greatest abuses occur in the use of milk, fruit, and eggs.

It has been found helpful to call the ward surgeons into the offic whenever their requisitions for extra food are apparently unjustifie and discuss the matter with them. When the ward officer know that the medical officer in charge is following up these details he wi exercise much more discrimination and scrutinize the lists more care fully before he signs them. The individual views of the various medi cal officers in regard to special food naturally vary greatly. It ma be stated, however, that if the regular diet is well prepared and at tractively served, very little extra food will be required for any excep those patients convalescing from operations or prolonged infections.

Nourishment Between Meals.—In some institutions it has bee noted that a nurse or orderly would fill up a tray with eggnogs or othe beverages at 11 a. m. and 3 p. m. and walk up and down the war inviting the patients to partake of the same. Such a practice is mos reprehensible; it destroys the appetite for the next meal so that th meal is not enjoyed, and the patient then often complains of the qual ity of the food, which really is very good. Patients who have bee deprived of their regular meals on account of operations or for othe reasons may, of course, receive special nourishment at appropriat times, but for the ordinary patient, the regular diets—full, liquid, o soft, etc.—are usually ample without any additions. For tuberculou cases it may be advantageous to allow a cup of cocoa or a bowl o soup or hot milk with a sandwich at 9 o'clock in the evening in orde to aid sleep and maintain the body heat throughout the night, if th patients are sleeping in the open air. But this is all the intermea nourishment that is usually advisable even for this class of patient.

The Proper Serving of Food.—Food should be presented in a attractive manner and either hot or cold, according to its nature. Good-looking china, clean napery, and the like are all, of course, essential to those who have been accustomed to this sort of service. At mealtime one's surroundings should be pleasant and unnecessary noise and odors shut out, in so far as is practicable. Dishes may be garnished with parsley and other means adapted to make them pre-sent an inviting appearance. In season a few flowers on the table will be much enjoyed and will add a touch of color to the dining room.

For special diets it is now practicable to obtain small ornamental paper saucers, boxes, and other pleasing containers in which the va-

rious foods may be sent from the kitchen to the wards. Great effort should be made to make the trays inviting, for patients confined to bed will usually have but little natural desire for food. Every tray should be covered with a clean tray cloth or fresh paper napkins and the tray equipment should be bright and spotless.

Serving food at the proper temperatures.—Of far more importance than the items mentioned above is that food should be served either hot or cold as the circumstances require. With the steam tables and other appliances now usually at hand, it is not very difficult to provide hot food in the main dining rooms; however, the furnishing of food which is really warm to the bed patients in the wards has always constituted one of the most difficult problems in hospital administration. In fact, so many difficulties arise in this connection that frequently executives appear to give up hope and are likely to assume the attitude that cold food has always been a complaint in all hospitals and probably always will be. Such an attitude, of course, is absolutely inexcusable, and when detected should be instantly corrected.

Tray Service.—On account of the various problems involved, it is difficult, but by no means impossible, to serve hot meals to the patients who are fed by trays. The food is usually prepared in the main kitchen and taken to the wards in food carriages or other containers designed to protect their contents from a loss of heat. However, ordinarily the food should be reheated before putting it on the trays, which can usually be done in the ward diet kitchens. If no other facilities are available, a large dripping pan set on the top of the diet kitchen stove may be filled with hot water and the food in suitable containers may be placed in this as soon as it comes from the main kitchen and kept there pending its service to the patients. The plates used should always be piping hot before anything is placed upon them. They may be heated in the oven, on radiators, or better still on special appliances.

All the trays may be prepared with bread and butter, condiments, napkins, and eating utensils before the meal. Then the orderlies should carry one or two at a time to the stove; the hot food should be added and the filled tray taken immediately to the patient. Unless this matter is especially watched, all the trays will be set up at one time with the main viands and allowed to stand until the attendants can distribute them. The latter method saves trouble, but a number of of the prepared trays will have to wait so long that they will reach the consumer in poor condition.

Tray racks.—Most diet kitchens are equipped with tray racks. Such racks are usually constructed of wood and consist of shelving about 8 inches apart. The trays are placed on these shelves and there is sufficient clearance room above the trays so that dishes and

tray equipment may be properly placed. These racks greatly econo mize space and are extremely convenient.

Tray equipment.—Ideal equipment for trays has not yet been de vised, but it should include salt and pepper shakers, sugar bowl cream pitcher, butter dish, and, if possible, an individual coffee o teapot. These articles should be of suitable size and made of ligh and durable material. For ward use they can not, of course, be to expensive, but nevertheless they should present an attractive appear ance. The salt and pepper shakers should be of glass so far as th bottom part is concerned, or otherwise they will be constantly sen to the patient empty. The sugar bowl and cream pitcher may b made either of metal, glass, or porcelain. The coffee pot may b nickel or German silver.

Aluminum trays are light but very difficult to keep bright. Woo trays are hard to keep clean, especially in the corners where grain of sugar or salt or crumbs continually collect. The chinaware use on trays must of necessity be fairly light in weight. Compartmen plates have certain advantages for tray use as they conserve space

There is also a metal plate of this description on the market wit a double bottom which may be filled with hot water, thus serving t keep the food warm. These plates are expensive and considerabl time is required to put boiling water in the special compartment hence as constructed at present they are not practicable for ward use

It is believed that new and better equipment for tray use will b devised in the near future as new materials and new devices becom available. It may be said that there is a tremendous field for im provement in this particular line of hospital endeavor.

Sterilization of Dishes.—The sterilization of all mess gear, but mor especially spoons, forks, and knives, which are freely put in the mout and contaminated with saliva, is most important.

Experimental work has shown that the ordinary mechanical dish washers using hot suds, produced either by live steam or other specia appliance, are effective in killing the common pathogenic bacteria.

If the institution is not equipped with an automatic dishwashe which sterilizes eating utensils, special care should be taken that table ware utilized by tuberculous patients, active cases of syphilis, and the other transmissible diseases generally, and especially those of th respiratory tract, including pneumonia, is efficiently sterilized by some form of special treatment. Usually boiling in a large containe is the simplest and best solution of this problem.

Cafeteria Service.—The advantages claimed for cafeteria servic are—

(1) That the self-service saves the expense of the waiters.
(2) That the individual may select just what dishes he wants.
(3) That only as much food is taken by each individual as h can consume.

The economy of self-service is more apparent than real. If the employees required to supervise the serving of the food expeditiously at the steam tables and to clean up the dirty dishes and carry them to the kitchen were designated as waiters it would be found that not a great deal of additional assistance would be needed to serve the meals in the usual fashion.

In so far as the taking of only such food as the patient desires is concerned, and the selection of portions suitable to each individual appetite, both of these advantages are gained practically by the ordinary method of service where the food is placed on the table in platters or other containers, and passed around so that each person may help himself as is the usual custom in Public Health Service hospitals.

Most people object to the cafeteria service for three meals a day, although they may tolerate it for lunch, especially where a large variety of items is offered and there is the opportunity of seeing the food before making a choice.

The cafeteria service is, of course, impracticable for many patients on account of their physical condition, as, for example, men with injuries of the hands or arms or those compelled to use crutches.

Distribution of Food.—Difficulty is frequently experienced in securing the fair distribution of food which has been placed on platters and passed from one patient to another. This is especially true of meat. Some patients often help themselves to such a degree as to deprive others of a sufficient portion by the time the platter has reached them. Various plans have been devised to overcome this difficulty. The presence of the officer of the day and dietitian in the dining room throughout the entire meal is a help. If the dining-room force is sufficient, the placing of the meat on each individual plate just before the patients enter may be attempted. Another procedure which has proved successful is to place each individual portion on heated saucers and distribute the meats in this way.

One argument in favor of the cafeteria plan is that it largely avoids the unequal distribution of food which may occur when the patients are permitted to help themselves from the platters.

Special Dining Rooms for Officers and Others.—Complaints are sometimes made that the table manners of some of the patients are disgusting to their companions who have possibly enjoyed better social advantages. The officer in charge will be asked to take some action in the matter.

On board ships the officers and crew eat at different messes. It is always of questionable expediency formally to recognize class distinction in Public Health Service hospitals, but some institutions have established separate tables in the dining rooms for the licensed men, and this plan has apparently worked out fairly well. One may

designate certain tables for different classes of patients, such as those of the United States Employees' Compensation Commission, but as these groups take in men of a greatly varied social status, this does not always accomplish the purpose desired.

Where a number of private rooms or small wards are available, the officers may be assigned to such quarters and fed by the tray service, which is usually a satisfactory arrangement for all concerned and avoids any question of discrimination.

While the regulations do not provide for the giving of any better accommodations to the officers than to the ordinary seamen, nevertheless there is no objection to separating the two classes where the facilities permit. Such separation is in reality desirable, and as the Public Health Service hospitals are being expanded, undoubtedly facilities will be provided so that this may be accomplished to a greater or less degree.

Dishwashers.—Mechanical dishwashers are all more or less alike in principle. The dishes are first roughly cleaned by scraping and then put through the dish-washing process. In the dishwasher a strong stream of hot soapy water is thrown against all surfaces of the china, carrying away the dirt, then a fine rinsing stream of clear hot water washes off the soapy water, and the process is ended.

In order to avoid waste, the hot soapy water is used over and over again by violently forcing it up against the dishes by some type of pump. The rinsing water either flows into a separate tank or dilutes to a certain extent the main washing supply.

It will be seen then that mechanical dishwashers at best have certain defects. Where the dirt is particularly firmly attached and insoluble in water, such as the yolk of egg, the articles are likely to come from the washer without being properly cleansed. This is especially true of forks, and it is necessary to scrutinize carefully all articles which have been washed in a dishwasher and pick out those which will require further attention and which usually must be done by hand, using a brush or some other similar appliance.

The larger dishwashers have traveling conveyors, the dirty dishes being sent in at one end and the cleansed articles removed at the other. Special machines are available for washing silverware and glassware. In most localities the water will leave an undesirable stain on the dishes unless they are wiped dry by hand afterwards. This is especially true of glassware and silver.

Where the water is used at a steaming temperature and plenty of soap is added, the ordinary dish-washing process kills all the pathogenic bacteria, and it may be assumed that modern dish-washing machines when properly utilized are fairly effective as a sterilizer.

The most important thing about the operating of dishwashers is to remember that the finished product must be carefully examined for

articles which have been improperly cleaned and that an amount of secondary handwork will almost always be required.

Dish Breaking.—The destruction of chinaware in all institutions is always an item of considerable importance and runs into a tidy sum annually. Considerable time and thought must constantly be expended in keeping this particular expense down to the lowest possible figure.

Whenever china breakage appears to be unusually large, investigation should be made to determine the cause. Very frequently inadequate facilities for handling the crockery are responsible for a great deal of this destruction. The method of determining what would be the most adequate remedy can be arrived at only by a painstaking examination of the methods of serving the meals, preparing the trays, collecting the soiled dishes, and the redistribution again to the pantries. It may be discovered that the greatest amount of breakage occurs somewhere along this chain and proper steps can be devised to prevent it. If the dishes have to be carried to the washing machine, suitable baskets or trays should be provided for this purpose. Overloaded trays or containers are very frequently the cause of loss.

The dietitian or assistant dietitian should carefully observe the various employees while they are handling the dishes, and those who are unduly careless and appear to be unable to correct their delinquencies should be discharged from the service.

Monthly reports on the dish breakage should be compiled and compared with previous months to determine whether or not this work is being properly handled.

In endeavoring to prevent the undue destruction of tableware, the writer has usually promulgated the following station regulation and found that its enforcement is quite effective:

MEMORANDUM IN REGARD TO BREAKING GLASSWARE AND CHINA

It will be necessary to have all employees replace, at their own expense, one-half of the articles broken, unless they can definitely prove that the breakage was due to conditions outside of their own control.

The expense of replacing the dishes can not be taken from the employee's salary check, but they may be given the option of replacing the china or having charges preferred against them.

Responsibility for Serving Food.—As the subsistence passes through a number of hands from the time it leaves the storeroom until it is consumed in the wards, the question may arise as to who is responsible for its condition at a particular point along its route. Considerable discussion has arisen on this point between nurses and dietitians in some institutions. A brief analysis of the methods employed in the particular hospital in question will usually enable one to clear up any difference of opinion on this subject.

In most institutions the ward diet kitchen is under the super vision of the ward nurse, and the medical officer in charge will look t her primarily to see that the food is properly reheated and served t the individual patients, as the nurse in most circumstances has direc control of the employees in the diet kitchen and the orderly in th ward. However, the chief dietitian and her staff are certainly vitally interested in seeing not only that the meals leave her department i the proper condition but that they actually reach the patient withou deterioration, and she or her representatives should follow up th food in the wards, no matter who is actually serving it there, an give any assistance or advice that may be necessary to insure th bed cases getting satisfactory service in this respect.

Full and unselfish cooperation between the nurses and dietitian is absolutely essential in solving the minor difficulties which arise i the furnishing of good food to the wards, and every one in authorit in the hospital should lend a willing hand and show marked interes in carrying out the details of this important work.

In studying the tastes of personnel and patients it is obviously necessary for the dietitian to spend considerable time in seeing how th food is relished or disliked by the persons being served.

One method of doing this is to scrutinize the material left on th plates, and every dietitian should be a close student of the garbage can Another method is to visit the wards at mealtime, come in persona contact with patients, and find out what they like and dislike Valuable information may be gained in this way, and sometimes th individual preference of patients will be a matter of great surpris to the personnel.

All of us are too prone to believe that other people are fond of th same dishes that we are, and many a dietitian has been somewha astounded to learn that pork was sometimes preferred to roas turkey; that some people do not like hot biscuits; and that other prefer cabbage to asparagus.

The greatest mistake that anyone in charge of a culinary departmen can make is to attempt to try to teach or to force an adult to ea articles of diet which he does not like. Most of the patients an personnel of Public Health Service hospitals are entirely too old t acquire new gustatory characteristics.

Checking up on the Service.—There is only one way by which the medical officer in charge can assure himself that the food is being served in the wards at a sufficiently high temperature, and that i for him to go to the bedside and verify the facts on frequent occasions Usually, it is not well to take the word of anyone else on this very important subject, for opinions appear to differ as to when food i hot—at least *when it is being eaten by other people.* Furthermore, the medical officer in charge will find it necessary to check this matte very often, as a change of nurses or orderlies may result in complete

failure to carry out a system which has been very carefully devised, and there is frequently a surprising indifference or stupidity manifested by some of the personnel in regard to this essential detail.

Feeding the Night Force.—The night force in service hospitals usually consists of the night nurses, night orderlies, the night watchman, night firemen, and possibly a telephone operator. These individuals do not ordinarily elect night duty, but have to take it by virtue of circumstances. It is imperative, then, that they should receive proper consideration, and should not suffer in so far as their subsistence is concerned because of the hours of their employment.

In the larger hospitals where circumstances warrant, the employment of a night cook is a very simple method of seeing that those who are on duty in the evening are properly fed. However, at the smaller stations, it would be impracticable to have a special cook for the few employees who must work at night, and some other means of giving them a hot meal must be provided. In the latter case, the dietitian generally has prepared and sent to one of the wards the articles to be eaten at midnight. In this list it is customary to include one item which can be readily cooked and served hot such as chops, steaks, fish, ham, and the like. One of the nurses will usually do the simple cooking required in a diet kitchen and an orderly will clean up the dishes after the meal has been prepared and served.

Daily Statement of the Ration Cost.—It is necessary for the officer in charge to know what the ration is costing from day to day, and for this reason, the dietitian should furnish him a daily statement showing the value of the supplies issued and the cost of the ration up to date for the current month. Unless this is done, it is absolutely impossible to control intelligently the expenditures for subsistence. If the expense of the ration is not figured until the end of the month, it is obviously too late then to attempt to effect any economies to bring it down to any desired amount.

The following is a sample form for making out this statement:

UNITED STATES MARINE HOSPITAL NO. 1,
Baltimore, Md., January 28, 1930.

Rations served:			
Officers	3		
Nurses	16		
Employees	36		
Patients	148		
Total number of rations to-day	203	To date	5,771
Supplies issued:			
Kitchen	121.84		
Wards	------		
Total supplies issued to-day	121.84	To date	3,693.12
Average ration cost to-day	$0.60	To date	$0.639

MARY DOE, *Chief Dietitian.*

The making out of this daily report of ration expense, while somewhat irksome, is nevertheless absolutely essential for an efficient supervision of the financial affairs of the institution. It will be remembered in this connection that the amount expended for food in an ordinary hospital is about one-fifth of the total monthly running expenses.

Waste Food.—The question of avoiding waste of food in hospital management is, of course, an important one, and a great deal has been written on this subject. The amount of food which is thrown away in most institutions is always considerably greater in proportion than it is in the private home, and frequently hospitals are criticized from this standpoint. However, it is the rule in all institutions never to try to utilize any food which has been placed on a patient's plate or tray, and as the appetite of many tray patients is most capricious, it is inevitable that a great deal of perfectly good material must be discarded.

In checking up the amount of waste, it is customary to report it as edible or inedible and to figure these two divisions on the basis of each patient per diem. The determination of the weights of edible and inedible waste, while apparently quite simple, is nevertheless by no means easy when the actual work of getting out the figures for a given institution is attempted.

By inedible waste is meant, of course, the bone, outside parts of meat which have to be trimmed away, the inedible skins, rinds or seeds of fruits, and the tops, roots, peelings, or other indigestible parts of the ordinary vegetables. Practically all material discarded before food is cooked is inedible, but a very considerable part of the meat and fruit which goes on the table may also be unsuitable for consumption; and so it will be necessary to separate the refuse from the tables themselves into these two divisions. If the determination of the two different classes of waste is to be carried out accurately, an employee must actually sort over the garbage from the hospital, divide it into these two classes, and then accurately weigh it. This would require so much time and labor that it would make the cost entirely out of proportion to the benefit derived, and usually some shorter cut is adopted.

Quite often the waste is weighed from one ward or one mess or from the whole hospital for one day and then this factor used for calculating the entire amount of waste for the month. In adopting these methods of estimation, many errors are likely to creep in and the final calculated statement may be well under the actual amount. For this reason, in contrasting the reports of different institutions, it is highly desirable to know exactly what method has been used in getting up the figures.

To obtain reasonably accurate results with the minimum amount of labor, one institution adopted the following plan, which appears to be apparently as satisfactory as any yet proposed:

It is comparatively easy to separate the refuse from the main kitchen from the waste originating in the wards and dining rooms. There is a central receiving station for all garbage in the hospital, and one end of this station is reserved for containers to receive all offal from the main kitchen. The other end is set aside for cans in which is placed the discarded food from all dining rooms and wards. In other words the garbage coming from the kitchen is kept separate from that collected from various tables and messes.

The attendant in charge of the receiving station keeps a daily record of the weight of the garbage which is hauled away. This report is made under two headings, the kitchen waste and the table waste.

For practical purposes the kitchen waste may be considered as composed entirely of inedible waste. The table waste, while mostly edible, does contain a certain amount of inedible material, and certain corrections must be made in the gross amount in order to give the correct statement as to the real amount of edible waste accumulated. This inedible portion consists chiefly of fruit skins, cores and seeds, rinds, corncobs, bone and skin of meats, fish, eggshells, and the like. In order to determine how much material of this sort is contained in the table waste, the following procedure is adopted:

The dietitian determines the number of pounds of oranges, apples, prunes, grapefruit, and the like which have been issued during the month. It has been found by various actual tests what the percentage of the inedible portion is among the foodstuffs above enumerated. For example, the following percentages have been adopted as representing the inedible parts of the foods mentioned:

Article	Percentage of inedible material	Article	Percentage of inedible material
Lemons	50	Watermelons	50
Grapefruit	25	Cantaloupes	70
Apples	20	Corn on the cob [1]	38
Oranges	50	Chicken [2]	6½
Bananas	30	Plums	40
Prunes	15		

It is very easy, therefore, knowing the amount of such foods issued, to estimate fairly accurately how much of them is inedible. This inedible material is all in the garbage taken from the dining rooms and wards; hence, after determining the amount, it is deducted from the total weight of edible waste as reported by the attendant and

[1] This is the percentage of waste, of the ears of corn, not counting the husks.

[2] Bones and skin of cooked chicken left on plates—percentage calculated on total weights of chickens undressed. It is assumed that the heads, feet, and entrails will be found in the garbage from the kitchen.

added to the total amount of inedible waste, as reported from the same source.

It is recognized that this system is not absolutely accurate, but to a certain extent the errors balance themselves. It gives an accurate figure as to the total amount of waste being hauled away, and divides the same into two classes—the garbage from the kitchen and that from the dining rooms, one of which is for the most part inedible and the other edible. By watching these figures and checking them with the number of patients, about as accurate information can be obtained on this particular subject as is practicable without incurring a great deal of unwarranted expense for labor.

Even a method as simple as this requires careful supervision to see that the garbage is placed in the proper cans by the various employees handling it. Considerable difficulty also is experienced in preventing the orderlies and kitchen men from throwing garbage into trash containers, and vice versa, all of which means that this department must be constantly watched if accurate results are to be obtained.

It has been found that the amount of waste from dining rooms is ordinarily small. There will always be considerable waste occurring on the trays, but this seems to be absolutely unavoidable in many respects, as any attempt to reduce the amount of food put on the trays would undoubtedly lead to a great complaint on the part of certain of the patients who are capricious at best, and who would promptly claim that they were being starved if the food was not offered to them. It has also been found practically impossible to attempt to estimate in advance the amount of food these bed cases will consume and to cut down the portions accordingly, as sometimes they eat freely, whereas the next meal may be barely touched, and they themselves can not tell what they will eat until they see it before them.

It may be added that a great deal of water is likely to get into the kitchen refuse in one way or another, and unless this is carefully drained off the actual weights may be higher than they should be.

It will be noted on careful scrutiny that the amount of garbage coming from the kitchen and tables varies decidedly with the different seasons of the year. In summer, cantaloupe skins, watermelon rinds, corncobs, and the various hulls and tops of fresh vegetables will add greatly to the bulk and weight of the garbage cans. On the contrary, in the winter, the use of canned goods results in a lower figure in the waste column.

The best place to make this inspection is in the wards, where the food left on the trays by the patients may be observed. If this is not being carefully followed up, it may be very advantageous, as one officer of the Public Health Service has recommended, from time to

time to have the garbage from the garbage house spread out on a piece of canvas in the presence of the dietitians or others responsible and carefully gone over to see just what percentage of pieces of whole bread, bits of butter, untouched helpings of meat, usable greases, and the like, are being thrown away.

In the same seasons of the year the weights of the filled garbage cans are fairly constant, and the total amount may be estimated by recording the number of filled cans which accumulate, but the individual cans should be weighed from time to time, as the seasons vary, in order to have the figures constantly correct.

Disposal of Subsistence Waste.—Sometimes appropriate contracts may be made with near-by farmers for the purchase of garbage to be fed to hogs. If the contractor will haul the refuse away daily and handle it in a careful manner, it is usually a satisfactory manner of disposal. Certain institutions, such as insane asylums located in the country, often raise their own hogs and utilize their garbage for this purpose.

Attempts to dispose of garbage by incinerators are perfectly practicable if a suitable plant is available, but nevertheless expensive in the long run, as considerable fuel is required to drive off the watery elements before the garbage may be burned. Before purchasing any apparatus of this sort, care should be taken to ascertain how much fuel is necessary, as very frequently extravagant claims are made for incinerators in regard to their capacity to operate on small quantities of coal or wood.

Clean fat taken from the kitchen may be rendered out and manufactured into soap, thus making quite an important saving. While the soap thus manufactured may not be of a high grade, it is efficient for washing pots, pans, sinks, floors, and the like. Formulas for making soaps are in the appendix, see page 269.

Care of Garbage Storehouse.—It should be clearly understood by all hospital executives that the handling of refuse food is a major problem, and preparation for its collection should be made accordingly.

It will be necessary in all cases to provide a suitable place for the temporary storage of garbage as it accumulates between the intervals of its removal, and there also must be adequate means for the cleaning of garbage containers of all sorts. The room or house to which the garbage is taken should have a concrete floor, drained to an opening preferably in the center. The drain should have an adequate grease trap, which means that it must be large and easy of access. The entire place should be fly screened and well ventilated. Sufficient space must be provided in the garbage house to accommodate the filled cans of garbage and also to permit of the washing of soiled cans, and the storage of the necessary empty containers.

For cleaning purposes, a tank, usually made of concrete, large enough to submerge the cans, is essential. All garbage containers should be thoroughly scalded out and dried each time after they are emptied, as in no other way can they be kept free of objectionable odors. A rack should be provided for holding the cans upside down to permit them to drain. A hose should be installed so that the walls and floors of the house may be washed down with hot water when necessary.

If suitable facilities are provided to do this work so that it can be done in a cleanly and expeditious manner, it will be handled successfully. If the facilities are not at hand to dispose of the garbage and the garbage cans become neglected, it may be the cause of a great deal of complaint.

It is wise to build the house for the collection of garbage in such a way that the floor will be level with the wagons or trucks which take away the refuse so that the filled can may be loaded or dumped without undue muscular effort on the part of the attendant.

Some employee should be designated as being responsible for the care and condition of this room, so that it will not be difficult at any time to place the responsibility for neglect directly where it belongs.

Recently a plan of installing a fly trap in the roof of the garbage collecting house has been proposed and appears to be quite practicable, for a certain number of flies, in spite of all precautions, are very likely to get into the compartment.

CHAPTER V

OPERATION OF LAUNDRY PLANT

General Comment

Most hospitals have more or less difficulty with their laundry work. The chief defect seems to be that either the goods are not properly cleaned, so that in a rather short time they become gray and unsightly, or else the laundry processes are so destructive that the hospital linen is very short lived.

The laundry usually employs about one-twentieth of the hospital personnel; and as the output is one of the important factors in hospital management, it is evident that the operation of the laundry deserves a certain amount of time and attention on the part of the responsible head of the institution.

Those hospitals which are able to afford the services of a highly trained and experienced man to be in charge of this work are most fortunate. Such laundry superintendents command good salaries; and if it is impracticable to secure such a person, the officer in charge should be sufficiently familiar with modern power laundry procedures, to be able to give some intelligent and effective supervision to this department of the hospital when difficulties are encountered.

When goods are washed by hand certain factors automatically operate to protect the materials handled. The hands of the washwoman limit the temperature and the concentration of chemicals which it is practicable to use in the wash water, and her own strength determines the amount of friction which can be applied to the articles. No such limitations obtain in power laundries, where high temperatures, strong solutions, and mechanical stress may be applied without let or hindrance by careless or inexperienced operators.

It must be clearly understood that the process of laundering at all times is a destructive one to textile fabrics. The longer or more often the goods are washed, the quicker they will wear out; for the wear and tear on the beds is but a small factor in the disintegration of hospital linen as compared with the damage done in the laundry.

The modern power laundry endeavors to obtain a maximum cleaning effect with a minimum amount of injury to the goods handled. To secure such results the factors involved in the cleansing operations must be very carefully controlled, and much study has been given to this subject from both a physical and chemical standpoint. The

hospital superintendent should clearly understand that the efficie operation of a modern laundry plant requires constant attention small details, such as the accurate control and adjustment of t temperatures, chemicals, and physical stresses applied.

BRIEF DESCRIPTION OF LAUNDRY PROCEDURES

In order to understand the methods used in modern power laundri it is advisable to explain first of all a few technical terms which a often encountered and with which the ordinary reader may not b familiar.

Builder.—This is any substance which is added to the soap t increase its efficiency, as, for example, washing soda.

Built soap.—This is a compound of soap with some builder, alread prepared and mixed ready to be added to the wash water. Ther are many proprietary "builders" on the market, but some laundrie mix their own.

Zero water.—This does not refer to the temperature of the wate but to the softness, zero water being distilled water or rain wate without any detectable hardness.

Bleeding.—This is a term applied to the running or fading of colors

Tendering.—This is a term used to describe the destructive actio of chemicals on fabrics; that is, to make them more tender or easil torn.

Break.—The "break" applies to the first process to which the wash is subjected in the washing machine, usually a solution of lukewarm water is used for about 5 to 10 minutes to break up the easily soluble material and to remove those stains which might be set by heat.

Bleach.—This is the chemical substance used to whiten the goods It also removes stains and may be germicidal.

Sour.—The acid substance used to neutralize the alkalinity left in the goods by the soap and builder.

Suds.—A mixture of soap and water which will hold up a permanent foam on the top; also applied to the mixture of soap and water used in the washing wheels.

NOTE.—The amount of water to be used in the washer is described in terms of inches as shown on the water gage of the machine; i. e., a 5-inch suds means that the washing solution is 5 inches deep in the inner shell. A high or low suds means more or less solution than is normally used.

Wheel.—This refers to the revolving cylinder of the washing machine.

Classification.—This term is applied to the sorting out of the articles to be laundered according to their colors, material, or the degree in which they are soiled.

Titer test for soap.—Practically, from the standpoint of the laundryman, this is a test to determine the ability of the soap to stand

up under heat. Soaps of low titer are soft and readily soluble in cool water. High titer soaps have more body and are adapted for washing in higher temperatures.

A careful and scientific study of the processes involved in the removal of dirt and stains from clothing or linen has led to the adoption of more or less standard methods of procedure which are recommended for use in power laundries. In this study the following factors have been given full consideration:

Temperature of the water.
Time of washing.
Value of different soaps.
Value and different action of various builders.
Effects of various types of bleaches and the best methods of application.
Amount of "sour" required and the best methods of application.
Efficiency of various rinsing procedures.
Use of starch and bluing.

These factors were not only studied in relation to their ability to remove dirt but also as to their effect on the life of the goods and the permanancy of colors. The physical and chemical effects governing the use of the various detergents having been very carefully worked out, it is necessary that the approved method of procedure be closely followed for the best results. As flat work constitutes the bulk of hospital laundry, a brief description of the method for handling flat goods will be given in order that it may be referred to as a standard.

DESCRIPTION OF EQUIPMENT

Hospital laundries usually have at least the following equipment:

Washers.—Washers are horizontal cylindrical machines with an outside casing and an inner revolving cylinder equipped on the inside with ribs. The inner cylinder is known as the "wheel," and may be made of wood, but is preferably made of metal. The linens are placed in this cylinder and the opening is closed. The outer cylinder is supplied with a certain amount of water 5 to 10 inches deep, and the inner cylinder or wheel revolves first in one direction and then in the other. During its revolutions, the ribs on this wheel lift the articles up for a certain distance, and then let them fall into the water. Thus the mechanical process of washing is merely one of dropping the clothes in the water and rinsing them to and fro. There is a certain amount of rubbing of the goods on the side of the wheel, but this is not a very considerable factor.

If the water stands high in the wheel, it is obvious that the wash will fall a shorter distance than when it is low and be subject to less pounding; hence, articles easily damaged such as silks or woolens are washed in a high suds.

Extractors.—From the washer the goods go to the extractor, whic is merely a centrigufal separator which revolves at a high rate speed and throws about 60 per cent of the water out of the linens int the jacket.

Mangle.—The mangle, or flat-work ironer, is a large piece of ma chinery, consisting of revolving steel rollers heated by steam, and wide canvas band running around the rollers, known as the apro Another type has padded rolls running on concave, heated chest The partially dried wash as it comes from the extractor is shake out and fed into the mangle. As it passes over and under the heate rollers the remaining water is removed and the goods are both irone and dried by this process, coming out of the other side of the mangl in such a condition that they may be folded ready for use.

Tumbler.—The tumbler is an appliance in which the goods are bot heated and turned over and over repeatedly so that they are dried an softened in the same process. Tumbling is used for articles such a Turkish towels, bath robes, and the like.

Presses.—Presses are devices for applying both pressure and hea at the same time under power and are used for ironing uniforms, shirts and other similar objects. The press consists of two parts, the lowe part of which is stationary while the upper part is movable. Th article to be treated is laid on the lower section and is smoothed ou by hand, the upper part of the press, which is steam heated, the mechanically comes down and dries and smooths out the work (unde high pressure). Work which can not be done on the mangle can usuall be fairly well handled on the press, and these two pieces of equip ment take the place of the old-fashioned ironing board to a very grea degree, although a certain amount of handwork is still done in mos laundries in giving the finishing touches to those parts which can no be done in the press, such as collar bands on shirts, etc.

Special equipment.—In large laundries there are various specia pieces of machinery for ironing collars, neckbands, shirt sleeves an the like, but they need not be described here.

The requirement of special devices for the economical handling o items, such as turned-down collars, may make it better practice fo a small laundry to send work of this sort out rather than to attempt t perform such operations by hand.

Soap boilers or tanks and various articles of minor equipment wil be found in laundries and may be useful adjuncts to the variou processes required. Usually laundry soaps are specially prepare and are added in small quantities at a time to the wheel, being s finely ground that they readily dissolve.

Some method of cooking starch must be provided; and if much starched work is handled, a starch cooker is very convenient.

WASHROOM PROCEDURE

For washing flat work the following procedure is recommended by *he Washroom*[1] after much experimental laboratory and plant work, nd is quoted as an example of the best practice:

Multiple Suds Formula

First operation, break, 3 inches lukewarm, 90°–100° F., light suds, minutes.

Second operation, suds, 3 inches hot water, 130°–140° F., good ids, 10 minutes.

Third operation, suds, 3 inches hot water, 160°–170° F., good suds, 5 minutes.

Fourth operation, bleach, 3 inches hot water, 160°–170° F., 5 inutes.

Fifth operation, suds (built in bleach water after the 5-minute each period; add soap only when necessary), 10 minutes.

Sixth operation, rinse, 8 inches hot water, 160°–170° F., 5 minutes.

Seventh operation, rinse, 8 inches hot water, 160°–170° F., 5 minutes.

Eighth operation, rinse, 8 inches hot water, 160°–170° F., 5 minutes.

Ninth operation, rinse, 8 inches hot water, 160°–170° F., 5 minutes.

Tenth operation, sour, 3 inches warm water, 130°–140° F., 5 minutes.

Eleventh operation, blue, 8 inches lukewarm water, 90°–100° F., 5 inutes.

It will be noted that the entire process consumes 1 hour and 15 nutes, exclusive of the time required to run the solutions in and out, d that it involves some 10 distinct operations. This is an indica- n of the complexity and exactness followed out in the approved ındry procedures. Certain elements in the above formula will be scussed briefly.

Water.—Water for laundry purposes should be soft. If only hard ter is available, it should be softened previous to being used. Hard ter requires a considerably increased amount of soap and builder, d the salts in the water combine with the soap and form what is own as mineral soap. This substance in time accumulates in the rics and makes them gray and stiff.

Various processes are used to soften water, and the greater advan- e to be derived from water of this type amply justifies the addi- nal expense.

Water softeners.—Water softeners work on the principle of precipi- ing the mineral content and its ultimate removal. Various proc- es are used and appliances sold for this purpose. Whatever the thod adopted, the product after the process has been completed uld be tested from time to time with a standard soap solution to ermine the actual results that are being obtained. Sometimes

[1] rocter and Gamble.

the softeners do not function properly and water of poor quality is being introduced into the wash room.

If it is impossible to secure soft water for use in the washer, certain modifications of the standard methods should be used, but even then considerable difficulty in securing satisfactory results may be expected.

It has been suggested [2] that the addition of certain predetermined amounts of sodium carbonate (depending upon the hardness) to the water, thoroughly mixing, and then adding the soap separately is a less expensive method for softening water in the washer than adding the soap and soda together, as less quantities are required.

Hard-water formula.—Certain commercial laundries working with hard water employ a 10-minute 8-inch lukewarm "break," to which a given amount of washing soda in solution has been added. This is discharged and 3 inches of warm water is let in, and then enough soap and builder is added for a good suds, which is run for 20 minutes. The first suds is followed by a hot rinse.

The second suds is started with 3 inches of warm water, to which bleach is added and run for five minutes, then a determined amount of washing soda-solution is placed in the washer, steam is turned on, and the wheel is run for five minutes, when soap and builder are added to a good suds and the goods are washed 10 minutes longer at a high temperature.

Five rinses are used of five minutes each, starting with a 3-inch rinse and adding an inch for each procedure.

A formula to determine the exact amount of soda ash required for varying degrees of hardness will be found in the appendix on page 276.

In estimating the amount of water added to the wheel for the first and second suds, knowing the gallon capacity in inches on the gage, it must be remembered that the wet goods will retain at least twice their dry weight of water when the solution is discharged.

It should be definitely understood that laundering in hard water is unsatisfactory and uneconomical, and every laundry should have provisions for water softening, if the natural supply is hard.

Temperature.—The temperature at which the water is used is very important and provisions should be made so that the water can be obtained in the washer heated to at least 175° F. Considerable saving of time in the process can be accomplished if the water is of the proper temperature.

Most washers are supplied with live steam. This is an advantage in hospital practice, as it is possible to secure water of a higher temperature than that of the supply coming from a hot-water heater alone. However, steam may be wasted by being turned into the

[2] Robbins, McMillan & Bosart; Industrial and Engineering Chemistry, January 1926, p. 27.

washer and being allowed to run too long or by bringing the goods to a higher temperature than is desired.

Special washers are on the market which permit of heating the suds slightly over the boiling temperature and filling the machine with live steam under from 2 to 4 pounds pressure, it being possible to seal the cylinder for this purpose. Sterilization is, of course, readily accomplished in washers of this type, but it has been satisfactorily demonstrated that when the water is brought up to 175° or 180° F. and the goods are run through a suds and bleach at this temperature for a period of approximately 20 minutes, the ordinary pathogenic bacteria are destroyed and that such laundry methods may be considered as sufficient to make the washed goods safe. If the laundry is handling articles known to be infected, special care must be taken that the temperature of 180° F. is reached and maintained for at least 15 minutes.

Colored goods are washed in cold water or water of a temperature not to exceed 100° F. This is a matter which must be given careful attention.

Soaps.—The selection of a proper soap is important, and it pays in the end to use a high-grade product. A good laundry soap contains only a minute quantity of caustic alkali and is practically neutral in reaction.

At those stations where there is a considerable supply of refuse grease, soaps satisfactory for kitchen use or scrubbing floors may be made by the station force, provided some one is available who takes sufficient interest in the work to carry out the various details necessary for success in soap making. As the manufacture of laundry soap is a complicated process, requiring skilled supervision, it is hardly to be expected that the station product will be suitable for such use.

Laundry soap may be obtained either powdered or flaked, and the ease with which it dissolves is an important factor. The color is to a certain extent an indication of its purity, and the odor is also significant in this respect and of importance in washing flannels and colored goods, because any bad smell is likely to persist when cold suds have been used.

Built soaps are soaps to which certain chemicals have been added to increase the detergent action. It is possible to add soap and builder separately to the wash wheel or for the laundry force to mix them in varied proportions. Usually it is better practice to employ a built soap or possibly two types of built soap, one for badly soiled work and the other for moderately soiled goods, as the case may be, as the use of these built soaps insures uniformity of proportions which is not likely to be the case if each is added separately.

Builders.—The substances most often used to add to the soap are washing soda, trisodium phosphate, neutral or modified soda, and

sodium silicate. At times caustic soda has been used, but this substance is so destructive to fabrics of all sorts that its use can not be recommended, except for washing articles like overalls or drop cloths which have been badly stained by paints.

Action of soap and builders.—Pure water dissolves many substances to a greater or less degree, but there are many forms of dirt, especially grease, found on linens and clothing which can not be removed readily by water alone. Grease can be removed only by saponification or emulsification. A mixture of soap and water is a good emulsifying agent for grease, but its emulsifying power may be considerably increased by the use of various substances, most of which are alkaline in nature, such as the builders named above.

There are various factors concerned in the cleansing power of the solution of soap and water; among them may be mentioned surface tension and surface viscosity.

Soap decreases the surface tension of water, and the lower the surface tension the more easily the solution penetrates into the fabric and into the tiny cracks and crevices which may exist between the particles of dirt and the article to be cleaned.

Surface viscosity is an important element in the ability of a solution to form a more or less permanent suds. Roughly speaking, it is shown in the lathering power of a fluid and is a measure of the power of the mixture to emulsify grease or fats.

Surface viscosity is influenced by a number of conditions such as temperature, the titer of the soap, and the amount and nature of the builder present. High temperatures cut down surface viscosity, but soaps of high titer are able to resist to a greater or less extent the influence of temperature. When used in the proper proportions, builders assist in the emulsification, but when too great amounts are used the efficiency of the mixture of soap and water is decidedly lessened.

An excessive amount of builder in time will result in the staining and premature destruction of the fabrics.

In view of the importance of using just the right amount of builder in proportion to the soap, it is apparent that it is easier to adopt an exact mixture of soap and builder—i. e., a built soap—and add it to the wheel rather than to attempt to use the builder separately, as under the conditions ordinarily prevailing in laundries there is no very easy way of keeping the relative proportion of each correct if they are thrown into the washer separately.

What builders are best.—This is a difficult question to answer, as all of them have certain merits. It has been found in practice that sodium carbonate, or washing soda, often called soda ash, is about as satisfactory as any of the substances yet utilized as soap assistants. Many of the proprietary builders have been found to be most excel-

ent, but it is not apparent that they have such marked advantages over ordinary washing soda of good quality, when it is properly used with a good soap, as to warrant the extra expense usually involved.

Amount of builder.—Three parts of soap to one part of washing soda will be found satisfactory for ordinary work. If the linens are very dirty, 2 parts of soap and 1 part of washing soda may be used. If other builders are employed, the correct proportions should be ascertained and rigidly adhered to.

PROCESS OF WASHING DESCRIBED

Break.—The break is merely a preliminary soak and agitation in lukewarm water for the purpose of removing as much foreign material as may be gotten rid of by this method and to avoid setting certain substances; the temperature should be not over 100° F. and may be lower; five minutes will do for most work, but 10 minutes is recommended for hospital linens. A small amount of soap is used by some laundrymen. It is not advantageous to prolong the break too long, if time is an important factor.

Having given the "load" the "break," the dirty water is run off and hotter water is immediately introduced. For the first suds the temperature should be about 130° F. Sufficient soap and builder should be added to produce a good lather which will stand. After running the wheel for 10 minutes, the water is run out and fresh solution run in at a temperature of about 170° to 180° F., and sufficient built soap is added to maintain a good suds. The load is washed in this solution and at this temperature for 15 minutes, as this is the most efficient temperature at which to launder.

The effective part of the washing process takes place while the goods are in the suds; hence it is important that this part of the process be continued for the full periods specified, as cutting down the time of this very important operation will ultimately result in white goods becoming more or less gray.

The speed with which the washers are operated is an essential item, as upon it depends directly the number of times that the load is dropped into the wash water and the rinsing effect produced. Slipping belts and other factors may cause a decrease in speed, and this must be compensated for by longer periods of washing.

The avoidance of overloading is as important as any other factor in the washing process, as an overloaded wheel can not perform the washing or rinsing operations properly. For a 42 by 84 inch cylinder washer, 250 pounds, dry weight, of clothing is recommended for strictly high-grade production; 300 to 350 pounds may be satisfactorily handled, but quantities over this should by all means be avoided.

In the old-fashioned wooden washing machines with wooden ril the ribs in time wear down and the load is dropped at an earli period in the revolution of the wheel, than was originally the cas thus materially decreasing the efficiency of the washer.

Bleaching.—Despite the progress and good results obtained by t proper combination of soaps and builders in power laundries, neve theless, to secure a good quality of work at all times the use of a blea appears to be necessary.

Fabrics may be bleached in two ways, either by the addition removal of oxygen, the end results being the same. The chemica which remove the oxygen are known as reducing agents, of whi oxalic acid is a good example. The oxidizing bleaches, such Javelle water, a solution of sodium hypochlorite containing varyi amounts of the chlorine, usually from 1 to 10 per cent, are familia these whiten the fabrics by the addition of oxygen. Bleaches ma be produced in various ways, but the simplest bleach is prepared follows:

LIME SODA ASH BLEACH [3]

10 pounds of chloride of lime (lime bleach) 35 per cent available chlorine.
10 pounds of soda ash.
30 gallons of water.
Mix in an earthern or glass jar, use only the clear supernatant liquid.

The above proportions will furnish a clear bleaching solutio affording approximately 1.2 per cent of available chlorine.

An approved practice is to use 2 quarts of this bleach to eve 100 pounds of clothes.

Many laundries prefer to use a commercial bleach with a know percentage of chlorine, usually about 12 per cent. These prepare bleaches may be diluted and are satisfactory, as they save the labo of preparation and avoid the deposit of lime in the bleaching croc and formation of scum on top.

While the use of bleach is essential to obtain good results, neve theless it must be used with great caution, and in most cases whe complaint is made of excess wear and tear on the clothing in th laundry it will be found that too much bleach is being put into th wheel.

It has been found that with the use of bleaches as above described cotton fabrics may be washed twenty times and show an inconsiderabl loss of tensile strength.

Method of using the bleach.—Various practices prevail in regard t the method of using the bleach. In the "Multiple-suds formula" it is the fourth operation and is used in hot water with a depth o 5 inches in the wheel at 170° F. and lasts for five minutes, after whic

[3] Manual of Standard Practice for the Power Laundry Washroom. (Sec. Ed. 1924, p. 58.)

time soap is again added to the bleach water which is used for the last washing process. The use of the bleach in this way is highly recommended and has been carefully checked. Great care must be exercised not to use too much, as at this high temperature the bleach is more destructive than at the lower one.

Rinse.—Having washed and bleached the clothes the next procedure is to get rid of the soap and builder as quickly as possible. For this purpose four rinses are used, five minutes each, at a temperature of 160° to 170° F. It is important that the rinse water be hot, as it is very much more effective, also that the water be soft. The rinsing should always be continued until the water comes away clear.

Sour.—As the rinsing does not remove all the alkalinity from the goods which have been washed, it has been found to be good practice to use an acid solution to neutralize the alkalinity, and in fact to leave the washing slightly acid rather than alkaline.

A number of chemicals might be utilized as sours, but those most strongly recommended are acetic acid, sodium acid fluoride, and oxalic acid.

It must be remembered that in addition to overcoming the alkali reaction, the sour may have certain properties as a stain remover and be useful on this account. All the substances proposed have certain advantages and disadvantages, such as the destruction of the fabric, slow discoloration, or the production of odors, etc., which must be given due consideration.

Sodium acid fluoride has much to recommend it, as it does not injure the clothing nor fade colors, and some laundrymen prefer it to any other sour. This substance was formerly patented when used for laundry purposes.

The oxalic and acetic-oxalic acid mixture [4] has certain good points and is prepared as follows:

One pound of oxalic acid in 1 gallon of warm water; when this is cold, 1 gallon of 56 per cent acetic acid is added.

One-half pound of this mixture (or 8 ounces) is required for every 100 pounds of clothes.

The sour is used at a temperature of about 140° F., run for five minutes, 3 inches in the wheel, and is then raised to 8 inches with cold water, so that the resulting temperature is about 90°, and the bluing is done in this last solution.

It is well to check the "over" or "under" effectiveness of the sour by testing from time to time at the completion of the process with an indicator. Methyl orange may be used for this purpose or commercial indicators may be obtained which are especially put up for the laundry trade.

[4] Manual of Standard Practice for the Power Laundry, p. 87.

The above methods are typical of those used for ordinarily soile flat wet work. If the material is but slightly soiled, as, for exampl sheets which have been on the bed for only one night, the washir procedure may be modified in that the second, third, and fourt suds may be combined in one operation of suds for about 10 minut at 140° F., followed by the bleach, rinsing, and sour above describe so that for such slightly soiled materials the time of washing may b shortened to 55 minutes instead of 1 hour and 15 minutes and ver satisfactory results obtained.[5]

Net washing.—Where the goods are washed in nets, it is usuall necessary to wash them for longer periods and to have all the solu tions stand 2 inches higher in the wheel. The articles should b carefully opened up before putting in the nets and not packed in to tightly.

Colored goods.—To avoid the bleaching and fading of colored goods they must be washed at a lower temperature, never to exceed 100° F

Silks.—If the colors are fast, they may be washed with pure soa at 100° F. and plenty of water in the washer, called a "high suds," to avoid pounding. Thin silk materials should be washed in nets Bleach is, of course, entirely out of the question.

Woolens.—Woolens must be washed with neutral soaps and wit plenty of fluid in the washer to avoid too much stress on the fabric It is extremely important to avoid sudden changes in temperature which at no time should exceed 100° F. The machine should b stopped while the fluid is being drained out. The washing must b repeated as often as is necessary to obtain the desired results Blankets should be dried at room temperature. Chlorine bleach i very injurious to wool.

Separation according to degree goods are soiled.—It can be easily understood that more time will be required to cleanse a dirty articl than one which is only slightly soiled, hence there is every reaso for accurately separating the articles coming to the laundry int such classes as can be appropriately handled. How far it is wis to continue this classification will, of course, depend upon individua circumstances; but where a good grade of work is to be secured without undue destruction to materials handled, it is essential tha such separations or classifications be made as gross variations in soiling will require.

The most common faults found in most institutional laundries are failure to separate the goods properly and running the washer fo too short a period. As a result the badly soiled articles which have been placed in the machine with those of better appearance come out only partially cleansed, and after this practice has been followed a

[5] The Washroom, issued by Procter & Gamble, p. 78.

number of times the linens assume a grayish color which is very difficult to eradicate.

TESTING THE EFFICIENCY OF THE LAUNDRY

In recent years very reliable methods have been devised for testing the actual results in power laundries. The method utilized is to use what is known as the test bundle,[6] which consists of several different pieces of fabrics. These are put through the wash a number of times and then checked with pieces of the same fabrics which have been preserved without going through the washing for the purpose of comparisons.

A piece of new toweling or sheeting is obtained and cut into pieces about 20 inches long. A piece of blue and white checked gingham or some other fast-colored material can be used as a control for effect on colors. The samples are hemmed and then given one light wash to remove sizing and bluing.

For the white work, one of the sample white towels is grossly and deeply soiled while another is taken without any change whatever, and both are put repeatedly in with the regular goods so they are subjected to some 20 washing procedures and at the end of the twentieth wash, or before, the badly soiled towel is compared with the original to see how much of the dirt has been removed. The unsoiled towel is checked with the original to observe whether there has been any graying of the color or any other change. The tensile strength of the towels after having been washed twenty times is compared with the new piece of material.

Those laundries which do not have mechanical devices for testing the tensile strength may continue the washing process on the sample, noting the number of times it is laundered until it begins to show the effects of wear and tear and becomes worn.

For colored goods the test pieces of colored gingham can be washed a stated number of times and then the color contrasted with that of the standard sample which has been through the laundry only once. The fading or bleaching of colored goods can thus be accurately observed and possibly checked. The test bundle certainly affords a method whereby articles which have been washed a number of times may be accurately compared with the same goods which have been washed only once and at the end of each week the laundry operator can have a fairly good idea as to the efficiency of the various processes employed.

SPECIAL LAUNDRY PROCEDURES

Occasionally articles of equipment will come to the laundry so badly soiled or stained as to preclude the possibility of making them

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[6] The Washroom, The Procter & Gamble Co., Cincinnati, Ohio, p. 26.

serviceable by any of the ordinary washing processes; hence, specia treatments are sometimes utilized for such articles. These processes consist in prolonged boiling in strong solutions of built soap and soda ash and whitening with permanganate-oxalic acid bleach or similar procedures, all of which are more or less destructive to the fabrics but justified for the particular purpose indicated. The exact method of applying these special processes will be found on page 275 of the appendix.

SUMMARY

Any of the conditions named below may cause the flat work gradually to assume a grayish appearance; and if this trouble is experienced in the laundry, each of them should be carefully investigated:

1. Washing in hard water.
2. The use of excessive builder.
3. The use of too little builder.
4. Insufficient sour.
5. Washing at too low temperature.
6. Running the wheel at too slow a speed.
7. Washing with too low water.
8. Rinsing in hard water.
9. Washing in nets without giving additional time and using higher water in the wheel.
10. Not continuing the washing process for sufficient time.
11. Overloading of washing machines.

(NOTE.—In preparing the foregoing, Procter & Gamble's manual, The Washroom and the Manual of Standard Practice for the Power Laundry Washroom, 2d, ed., published by the Laundery Owners National Association, were freely consulted for technical data.)

CAPACITY OF THE INDIVIDUAL WORKERS

On a power press one operator should turn out from 8 to 12 shirts per hour. It is usually estimated that on family work one operator with one press and one ironing board should iron 6 to 7 pounds per hour.

LAUNDRY COSTS

An analysis of laundry costs is at times interesting. Estimated on gross return, power laundry plants figure their labor charges at from 22 to 28 per cent, and the cost of collecting and delivery as 30 to 31 per cent, with a net profit of approximately 10 per cent.

It would appear from the above that in institutional work the laundry pay rolls ordinarily should not exceed one-fourth of what the output would cost if it were done at the regular retail rates.

Considering the special rates usually given institutions by laundries, the labor charges should figure about 45 per cent. It is estimated

hat it is possible to turn out flat work at a complete cost of $1.75 per 00 pounds, but this includes only the cost of labor and materials.

These statements may be used as factors in checking up whether r not a station laundry is turning out the amount of work it should or the number of personnel it is carrying and the salaries paid.

METHOD OF ISSUING LINEN FROM THE LAUNDRY

Various methods are used to insure the proper return of linen from he laundry to the wards. The simplest and most satisfactory in all espects seems to be the "exchange plan."

The orderly and nurse make a correct list on the ward and the rderly then carries the articles to the general linen room. Here he eceives in exchange for this soiled linen an equal amount of clean nen, and the items should again be checked over, upon arrival in he ward, by the nurse.

No matter what plan is adopted, it seems inevitable that from time o time difficulties will be experienced. These difficulties are usually ue to the fact that the main linen room does not have sufficient aterial on hand to make a complete exchange in all respects and ill issue a signed memorandum to the effect that the ward is owed ertain articles. These I. O. U.'s, so-called, may be lost or there may e discussions later as to their correctness, resulting in disputes etween the nurses and the laundry force.

The counting of the laundry on the ward and in the linen room onsumes time and is more or less irksome; nevertheless, unless this carefully done, shortages are bound to occur, and there appears to e no other plan of avoiding it.

Provisions should also be made so that when articles are worn out eyond repair and taken to the laundry they are taken up and placed by usable material without the necessity of going through a aper transaction.

It is customary for the linen woman, in addition to checking out nd receiving laundry, to make the necessary repairs to the same; at is, to sew buttons on pajama suits, mend rents in tablecloths, eets, and the like.

MARKING LINENS

All linen should be plainly marked with the name of the institution nd also the date on which it is put into service. The marking ould invariably be placed on the same part of each article so it can e easily located.

It may be necessary and advantageous to mark certain articles owing the source, such as "officers' quarters," "nurses' home," a similar designation.

CHAPTER VI

MAINTENANCE OF GROUNDS

General Comment

The first impression of an institution depends to a certain extent on the natural surroundings. The hospital grounds and approaches should therefore be made as attractive as funds will permit. All government stations should be maintained in a manner consistent with the dignity of the Nation which they represent.

Nothing adds as much to the appearance of a building as well-located shade trees, properly contrasted with appropriate shrubbery, winding well-kept roadways bordered with cement walks, and properly graded grounds covered with thick green grass.

Where such essentials are lacking, every effort should be made to secure them as rapidly as time and resources will permit. The reservation should be studied from various aspects. It may be that a certain amount of grading would improve the appearance; in other places a bank may be removed to advantage, trees may have to be thinned out or cut down. If there are crumbling banks, retaining walls should be erected to hold them in place. Bare spots where grass will not grow may be covered by the planting of other types of foliage.

Wooden walks should be replaced by concrete walks, and broken pavements should be repaired or removed. Stone steps which have settled out of line may need resetting or refacing. Ugly fences in some cases can be removed altogether, owing to new conditions or replaced by more ornamental and newer construction. The lighting system of the grounds should be included when a survey is being made looking toward improving the appearance of the reservation. as frequently changes can be instituted with profit.

Signs.—Every institution should be easily identified by means of suitable signs. Nothing is more annoying than not to be able to recognize a station when looking for it. If the grounds are extensive, additional signs should be placed along the approaches so that strangers may know how to find the executive building. Provision should be made for lighting these signs at night. It is needless to say that the markings should be of a permanent type and dignified in character, in keeping with the rest of the plant. Cast bronze is very suitable for this purpose, being practically everlasting and not requiring

polishing. The greatest drawback is the price, but the only expense is the first cost. Signs should be securely fastened to stone pillars or gateways or erected on some permanent and safe support.

Next to cast bronze in appearance comes the black, sanded, wooden sign with gold letters. These letters frequently become tarnished, however, and such a sign is a makeshift at best, but much better than nothing. Enameled signs placed out of doors are very likely to be damaged by mischievous children who delight in throwing stones at such objects.

Sidewalks and pavements.—The station sidewalks and gutters should be kept in good repair and swept as frequently as may be necessary to keep them in a presentable appearance. It is needless to say that in winter the snow and ice should be promptly removed for the comfort of pedestrians, also to comply with whatever city laws may be in force concerning such matters.

Roadways.—The roads will need about the same amount of supervision as the sidewalks. Occasional repairs will be required and this should be borne in mind in getting up the estimates for the amount needed for annual repairs for the station as a whole.

Lawns.—Lawns should be kept closely clipped at all times and thoroughly weeded. Certain varieties of grass will grow better under shade trees than others. The presence of too many shade trees makes the securing of a good-looking lawn practically impossible in some localities, and it may be advisable to thin out a number of the trees in order to secure more sun for the grass.

The grass should be cut very early in the season and the mowing should be repeated at frequent intervals so that the cut-off material does not have to be removed. If it is allowed to remain on the plot, it acts as a fertilizer and mulch. Even grass can not be grown without proper enriching agencies, and suitable plant foods must be added from time to time, usually every spring.

Ordinary well-rotted horse manure has much to recommend it, because it carries a large amount of organic matter which retains the moisture and slowly breaks down, producing a suitable support for plant life for long periods. A great disadvantage to fertilizer of this sort, however, is that it is likely to contain the seeds of many weeds which appear in the ensuing spring.

Frequent and proper enriching will do a great deal toward keeping the grass from dying out during dry seasons and from disappearing under the trees and in other spots where the growth may have a tendency to become thin from time to time. In midsummer, sprinkling will be necessary, and oftentimes the night watchman can give a great deal of help in this matter, besides looking after his other duties.

In addition to keeping the lawns closely clipped, it is very important that the edges be kept neatly trimmed at all times around

flower beds, trees, or similar places. This will add about 100 per cent to the appearance of such spots.

Grass plots should be constructed so that the ground is true to grade and presents a flat and even surface. Small depressions or bumps in lawns are most unsightly. If there is a considerable grade it may be advisable to lay out different areas connected by terraces.

Trees and shrubbery.—Suitable trees and shrubbery should be placed about the buildings and driveways to prevent bleakness and add generally to the appearance of the reservation.

Most of the station grounds are fairly well equipped with shade trees at the present time; but trees die from time to time, and when it is seen they are in bad condition new plantings should be set out with the idea of replacing such trees as will have to be removed.

It may be practicable at times to obtain trees of a more desirable or attractive type than those already in place. The usual plan is to set out the new trees with the idea that when they have obtained some growth, the older trees can be cut down and the later additions will be of a size and in a suitable location to fill in the gaps caused by the removal.

At times trees will be donated by park boards or individuals, but usually, if satisfactory results are to be obtained, trees and shrubbery must be purchased from nurseries.

It is well to give considerable time and study to securing handsome and desirable trees for the station reservation, as the results are pleasing and the benefit will continue for many years.

Evergreens.—Evergreens are very useful in making the station grounds more attractive, because they retain their foliage in winter as well as in summer and are attractive at all seasons of the year. The varieties of evergreens available for this purpose are numerous, ranging from large trees down to very small shrubs. Plantings of this description can be utilized almost anywhere about the grounds.

A few of the larger varieties scattered among the deciduous trees will do much to improve the appearance of the place as a whole. The low-growing varieties thickly planted along the fronts of buildings will serve to hide the splash line and break the monotony of the color of the walls. Suitable varieties will make handsome ornamental borders to the roadways, and appropriately placed clumps will completely change the appearance of an unsightly gateway.

Attempts to transplant evergreens growing in the forests are rarely successful, and the trees obtained from such a source are usually unsymmetrical and unattractive in appearance. The nursery men transplant evergreens at frequent intervals, which results in a small and compact mass of roots so that at the time of the final transplanting the tree is very much more likely to survive than one which has grown under natural conditions.

Flowering shrubs.—In addition to evergreens, certain varieties of flowering shrubs and bushes when they are in bloom will give a very much desired flare of color to the landscape if they are advantageously located.

In endeavoring to set out new trees and plantings on the reservation the officer in charge should select only those varieties which thrive in the locality in question. This question can be determined by observing the grounds of near-by institutions or consulting with the florists and nurserymen in the vicinity. All ornamental trees and plants require a certain amount of care, especially until they are well established, and station officers should not attempt to set out more material of this sort than can be properly attended to. If the soil is poor, enough good soil must be secured to support the new plantings, and all recently transplanted trees and shrubs must be watered and fertilized for varying periods, depending on the nature of the individual growth concerned.

More detailed information concerning shrubbery suitable for station use, especially evergreens, and the method of locating the same will be found in the appendix, on pages 277-290.

Trees subject to diseases.—All trees should be constantly watched to see that they are not being attacked by blight or other infections so that spraying is necessary. Decay or similar processes may make the services of a tree surgeon necessary. At least once a year the trees should be carefully gone over to determine whether or not pruning is in order.

The Supervising Architect believes in taking care of the trees of the reservations and will spend appropriate sums with this end in view if the matter is brought to his attention by the officer in charge.

Flower gardens.—Attempts to maintain flower gardens on station reservations do not usually meet with much success. The flowers come and go; and while they may present a pleasing appearance when in bloom, later the withered plants and bare spots of soil are unattractive. Certainly closely cropped lawns are much to be preferred to badly kept flower beds, and the ordinary hospital personnel find it easier to care for the grass.

Lighting system.—A properly planned lighting system for the grounds and roadways is imperative. The lights should be so placed that patients seeking admission can easily find their way to the main entrance of the hospital at any hour of the night. The question of the safety of nurses and other female personnel entering and leaving their quarters must be given due consideration, and all main walks should be well illuminated. Certain lights may require relocating or the installation of higher powered fixtures.

There is sometimes carelessness displayed about extinguishing the lights about the grounds at dawn, and so appropriate station rules should be promulgated in regard to this detail.

Fences and walls.—Fences are not used as much as formerly, and sometimes those in place can properly be dispensed with. Where they are necessary they must be kept up well, as nothing gives a greater impression of neglect than a broken-down fence.

Iron and wooden fences must be painted at frequent intervals and kept trued up at all times. This applies to fences in the rear as well as those around the front of the building.

Stone walls require but little attention; however, they must be inspected from time to time, as the elements will gradually cause the mortar to disappear from between the stones and repainting may be necessary.

All types of fences show a tendency to sag and get out of line.

Fire hydrants.—All fire hydrants should be painted a distinctive color or a light shade so that they can be easily located at night.

The hydrants should be tested at frequent intervals, and especially in winter, so that freezing can be detected.

Benches and swings.—Every effort should be made to have the patients secure as much enjoyment out of the grounds as is possible. It is especially desirable that they should be encouraged to go out in the fresh air and sunshine.

For the above reasons a number of comfortable benches should be located at suitable parts of the reservation for the use of ambulatory patients. Iron and concrete seats are both cold and uncomfortable; hence the seats and backs proper at least should be composed of wood. These benches should be stored indoors in winter weather and given a fresh coat of paint every spring.

Solarium.—A special place for giving sun baths should be available at every hospital. The only requirements for such a unit are that it be protected from drafts and screened from the observation of passers-by. An iron-pipe framework about 6 feet high supplied with canvas curtains will make a suitable inclosure. There should be a wooden or concrete floor and the space should be provided with sufficient lounging chairs so that the patients may rest comfortably while taking the treatment. The side curtains may be shifted as the winds and the position of the sun make necessary. A site for the solarium should be chosen so that the patients can be easily taken to it either on stretchers or in wheel chairs.

Keeping the grounds clean.—All reservations require a certain amount of policing up from time to time. Loose newspapers and similar material will be blown over the lawns and will find a resting place among the shrubbery. This is especially true after a windy day. Storms will break off dead limbs and twigs from trees and blow down

some of the leaves. This miscellaneous débris, especially the paper, is most unsightly, and should be removed at once.

Around the buildings and porches a collection of burnt matches and cigarette and cigar stubs continually accumulates. Sometimes orange peel and pieces of dressings are thrown from the windows. It is well to assign one of the employees to correcting these special conditions, and to make frequent inspections to see that the grounds are being cleaned up as often as required.

A great many unserviceable articles accumulate from time to time which appear desirable to keep in order to utilize certain parts for repair work. The storage of such items, which range from worn-out grate bars to laundry mangles, is often a vexatious problem. Frequently they are placed under porches or around the back doors of sheds, in the garage, and in other out-of-the-way places, but are nevertheless more or less conspicuous. These useless articles give the grounds and buildings a most untidy appearance.

The better plan is to dismantle this worn-out equipment, after condemnation, salvaging such nuts, bolts, gages, valves, casters, brass and iron fittings, and similar materials as may be useful, and destroying the remainder.

The saving of old articles for possible future use, while a natural instinct of all thrifty persons, is often carried to such extremes that the hospital storehouses, basements, and other parts of the buildings are unduly encumbered with worthless material which will never be used and the value of which is in no way commensurate with the amount of time and effort required to keep it in order.

Fruit trees.—If sufficient space is available, fruit trees are at many times a boon to the institution. However, there are certain objections to station orchards. Experience has shown that the personnel and patients are likely to eat the fruit when it is entirely too green, thus producing gastrointestinal disorders. At times there has also been considerable heartburning over the question as to the disposition and ownership of the crop. If fruit is available, some person should be designated to pick it and it should be divided in an equitable manner among patients and personnel. The picking of fruit and flowers indiscriminately should be absolutely prohibited on any Government reservation.

Tennis courts.—Tennis courts are a great asset to a station and afford a great deal of pleasure to the hospital personnel. If there are courts on the station grounds no time is wasted in traveling to and from them, and even a spare half hour can be profitably utilized.

The regulation court is 78 feet long by 36 feet wide. The back stop should be 20 feet away from the service line and 10 feet from the side lines, making the total area required 118 feet by 56 feet.

In case the space available is very limited, the back stop may be moved up within 12 feet or even 10 feet of the back line and still furnish a court which will afford considerable amusement and exercise. The especially prepared surface need extend only 1 or 2 feet beyond the service and side lines.

Grass courts require a great deal of rolling and the nets and tapes must be constantly moved to prevent undue wear in one spot. Asphalt and cement courts are expensive and also hard on the feet.[1] The most practical court for institutional use is the clay court, which in reality is composed of a mixture of clay and sand. Pure clay is entirely too sticky and soft in wet weather, whereas sand breaks up quickly and does not afford a good playing surface. By mixing clay and sand together, a surface is secured which may be fairly easily rolled and handled. It is not too sticky, somewhat porous, and packs down into a hard and compact layer.

There will be considerable accumulation of rain water; hence drainage is important. The court should slope toward the net from both ends. There should be a fall of about 1½ inches from the service line to the net. An inlet to a drain exactly level with the surface should be provided in the center of the net or just outside of one of the new posts. In the latter position an inlet will serve two courts.

The layer of clay may be from 2 to 6 inches thick; 4 inches will give good results, but if funds are scarce 2 inches may suffice, although a court of this type will crumble rather readily.

It will be found very difficult to spread the clay out in an even layer, as when it is delivered it is usually moist and extremely sticky. A small amount of sand may be sprinkled on the surface while the clay is being handled, which will make it a little easier to manage and be beneficial in the end. The rough material will have to be raked, tamped, scraped, and rolled down to a level surface. The clay must be wetted down to a certain consistency before it can be rolled, and a layer of sand on the surface will prevent it from sticking to the roller.

It must be remembered that it is absolutely impossible to roll the clay when it is too wet and that no effect is obtained if it is too dry. There is a certain point between these two extremes of moisture and dryness wherein it is possible to work the surface without having it stick to the roller, provided it is properly sanded. A wooden scraper will also be useful in bringing a new court into condition.

The back stops should be 12 feet high. It is convenient to have the court inclosed on the sides also, even if the netting is only 6 feet high. The framework may be composed of wood or better of iron piping. The wire netting should be galvanized chicken wire of 2-inch

[1] Climatic conditions sometimes make the use of asphalt or concrete necessary. The Ellis Island station has used with success a preparation called "Kyrock," and the courts can be used very soon after a rain.

mesh, extra heavy. Special inclosures with much heavier and more permanent netting and fixtures can be obtained from manufacturers who make them for parks and clubs. Small gates should be installed in the back stops at suitable places so that the players may get out to retrieve the balls which have gone out of bounds.

The net posts should be of substantial construction, deeply buried in the ground, 4 feet high, with a hole bored so that the net is 3½ feet high at the side lines. The best device for holding a net at the exact height consists of two ⅜-inch iron rods with an open eye on one end long enough to go through the post with about 6 inches to spare on the end opposite the eye, which is threaded and provided with a winged nut. When these rods are extended, the net rope may be looped over the hooks made by the open eyes and then the winged nuts tightened up so as to bring the net to the desired height.

Courts may be marked either by whitewashed lines or by tapes. The tapes will last one season and are fairly satisfactory. The whitewashed lines may be put down by a marker, but must be frequently renewed.

Clay courts require frequent sprinkling in dry weather to overcome dust, keep them from cracking, and make them pliable so that they may be successfully rolled.

In building tennis courts, the Chicago parks officials put down about 8 inches of clay, which is fairly accurately graded and then rolled by a heavy roller. The final dressing is composed of 2 inches of fairly fine quarry dust, which is rolled by heavy pressure when damp. This makes an excellent court.

CHAPTER VII

MAINTENANCE OF BUILDINGS AND MECHANICAL EQUIPMENT

Buildings

CLEANING PROCESSES IN GENERAL

The proper maintenance of hospital buildings requires the intelligent application of many different sorts of cleaning processes, and this subject will be discussed at considerable length on account of its importance.

CLEANING MATERIALS

Soaps.—Soap and water are the universal cleaners. Water dissolves and washes away many forms of dirt, and the soap acts chiefly by making an emulsion with greasy or fatty substances, which emulsion can be readily rinsed away by the application of fresh water. Various substances may be added to the soap solution to assist in the process of the emulsification. Further information on this subject will be found in the section on the hospital laundry, page 168.

Soft soaps.—Hard soaps when used in water which contains a considerable amount of lime or other mineral salts are likely to leave a film on the object which is washed, and this is difficult to remove. Potash soft soaps are more or less free from this objection and certain proprietary cleaning agents probably contain a small percentage of potassium carbonate, which gives the mixture some of the properties of soft soap.

Alkalies.—Cheap soaps usually contain considerable free alkali. The alkali may be of assistance in removing dirt, especially grease; hence such soaps are useful in cleaning pots, sinks, and the like. The alkali does not dissolve the grease, as is sometimes believed, but assists the soap in forming an emulsion and may in some cases saponify vegetable or animal oils, thus simplifying their removal. Certain alkalies may precipitate the lime salts in water, thus saving the soap solution and leaving more of it available as a detergent. Various processes are used to rid soaps of the alkali content incident to their production and soaps of varying degrees of purity are on the market for different grades of work.

While free alkalies assist in the removal of grease, unfortunately they also break down many other substances, which precludes their

use in solutions used to clean painted surfaces and most types of floors. Where alkalies are injurious soaps must be selected with great care so as to obtain those which are neutral in reaction.

Borax and ammonia.—Borax assists in cleaning processes by precipitating the lime salts present and acting as a water softener. It is a common custom to add ammonia water to solutions used in cleaning, and the mixture is very effective, but it is extremely destructive to paint work, one application sometimes doing irreparable damage.

This brings up the fact that all persons employed in the janitor service are likely to use much stronger solutions of soap and other cleansers than are actually needed, in an effort to reduce the labor required in cleaning processes. The ward nurses must be constantly on their guard against this practice or great harm may result, especially to woodwork.

Cleaning mixtures and compounds.—Thick and hard films of dirt are not greatly affected by being flooded with soapy water. To facilitate the removal of such layers, various compounds have been devised and extravagantly advertised by the proprietors. These mixtures are usually composed of soap powder and various substances added either to assist the soap in emulsifying grease or else mechanically to aid in the loosening up of dirt coatings.

To help emulsify the grease, sodium carbonate and various other builders are added to the mixture. In order mechanically to loosen up the foreign matter, sand, grit, or fine powders are frequently incorporated in the scouring compound. Some of the powders not only assist in removing insoluble coatings, but also act as polishing agents.

The materials commonly found in the proprietary cleaning powders are soap, sodium carbonate, and silicates of various degrees of fineness. However, sand or grit, when applied with force, has marked abrasive qualities and may badly damage metalic, porcelain, tile, or marble surfaces. For cleaning articles of this description it is necessary to use a compound in which the abrasive element is some fine nonscratching, polishing powder, and this point must be very carefully determined before issuing proprietary compounds to the janitor force for general use. The sample can be easily tested on a piece of broken window glass.

Other materials.—In addition to soaps, alkalies, and abrasive powders, other chemicals are sometimes employed as detergents. In this class may be mentioned trisodium phosphate, commonly known as "phosphate cleaner." There are also colloidal substances, some of which have considerable power in suitable solutions to assist in emulsifying grease and which, on account of their blandness, do no harm to fabrics or highly polished surfaces.

Proprietary preparations.—The large manufacturers have naturally taken great pains to get up suitable mixtures for cleaning purposes, and such preparations are widely advertised and extravagant claims are frequently made concerning their virtues. Most of these preparations contain one or several of the various chemicals mentioned above and can usually be duplicated at a considerably lower cost than when purchased in the original packages. It must be admitted, however, that the companies select their ingredients with great care, and that unless an equal amount of attention can be given to the subject, the proprietary product will usually be found to be more satisfactory than those made of less skillfully selected or cheaper materials.

It has been frequently observed that the cheaper imitations of some of the well-known cleaning compounds are by no means as effective as the original and are sometimes actually injurious. The writer has from time to time noted considerable damage has been done to institutions by using improper cleaning agents on window panes, porcelain bath tubs and lavatories, and nickel appliances such as operating room tables and sterilizers.

The Bureau of Standards has issued master specifications for the following:

Washing soda, No. 431.
Chip soap, No. 31.
Hand grit soap, No. 35.
Powdered soap (for laundry use), No. 245.
Soap, cake grit, No. 33A—
    Type A, for fine work such as glass and enamel.
    Type B for scouring and scrubbing.
Powder, scouring for floors, No. 34A—
    Type A for fine marble floors.
    Type B for tile or ceramic terrazo floors.
    Type C soap scouring compound for use on oily and greasy floors.
Phosphate cleaner, trisodium phosphate, No. 558.

These specifications contain the properties of the various ingredients and the materials to be used in testing samples. They are very useful in drawing up bids, examining samples submitted by dealers, or checking up formulas for institutional use.

Suitable cleaning implements.—If the janitor force is provided with suitable materials and proper tools, under competent and persistent supervision good results may be expected. Unfortunately, this subject is often not given sufficient attention and the workers are badly handicapped by improper materials and inferior cleaning devices.

Scrubbing brushes.—Most scrubbing brushes in use to-day are absolutely unsuited for the purpose intended, as they become soft and matted down, and when soaked in warm water have no ability to loosen up the dirt from the surface to which they are applied.

It is also important that brushes of different sizes be supplied, so that it will be possible to gain access to corners, spaces behind radiators, and other places more or less difficult of access.

Mops.—Mops should be made of strong material and have sufficient weight. One can not clean with a dirty mop, and so there should be facilities for washing and rinsing the mop out as often as required. Before being put away, the mop should be very carefully cleaned so that it does not become sour or putrescent. Well-ventilated storage spaces with suitable racks should be provided so that the mops can dry out quickly, which will greatly prolong their period of useful service.

Scrubbing, mopping, drying, and polishing floors are all laborious tasks, demanding much muscular effort. To lighten this burden many motor-driven devices have been introduced from time to time.

Floor machines.—There are a number of electrically operated machines which will scrub and polish floors—still others which will refinish a floor when it is in a bad condition. Where the area of floors to be treated warrants the initial expense, these motor-driven devices will be found most useful and convenient. It must always be remembered, however, that they must be supplemented by a certain amount of handwork in the corners and other inaccessible places.

Vacuum cleaners.—Vacuum cleaners have permanently established themselves as indispensable where much dust accumulates on rugs, mattings, upholstered furniture, and the like. They have the great advantage of removing dust and grit instead of merely stirring it up and transferring it to some other place, as is largely the case when feather or cloth dusters are utilized.

CARE AND MAINTENANCE OF FLOORS

CONCRETE

Concrete floors are fairly reasonable as concerns the first cost. They are durable, can be laid in one piece, continuous with the baseboard, and are waterproof to a certain degree. They have the disadvantage of being noisy, cold, hard on the feet, easily spotted, especially by grease, often irregular in color, and commonly exhibit a great tendency to crack. If for any reason it is necessary to remove part of a cement floor, the patch usually shows and is disfiguring. These floors are particularly appropriate for storerooms, laundries, basements, morgues, and other places where durability and cheapness are of more importance than appearance. Concrete gives off

a fine dust when much used, which is often annoying, especially in laboratories.

Care.—As floors of this type readily absorb grease and many other materials, caution must be exercised to prevent staining them. Cement floors may be cleaned with ordinary soap and water or the various scouring powders. Excessive amounts of alkali and all forms of acids should be avoided, as they are extremely destructive to the surface.

LINOLEUM

Linoleum is composed chiefly of pulverized cork and linseed oil. The finished product is very durable and quite resistant to most solutions. Having an oil base, however, it is attacked by alkalies, and this should be borne in mind.

Linoleum is somewhat plastic, and if laid over a rough and uneven floor will in time mold itself to the inequalities so that the surface shows the irregularities of the boards underneath. Therefore, old floors should be carefully smoothed off and large cracks filled up before the linoleum is laid, and when practicable a layer of felt or feltlike paper should be laid under the linoleum.

Linoleum should be cemented in place. Various compounds are used for this purpose. The one most often chosen has a dextrin base. If laid on felt, the felt should be cemented to the floor and then the linoleum cemented to the felt. There are waterproof cements, but they are difficult to apply and somewhat unsatisfactory in practice. To lay linoleum properly requires considerable skill and experience, and it is best to have this work done by trained workmen.

Care.[1]—Linoleum should be cleaned with sparing use of warm water and soap. As the cement is not absolutely waterproof, care should be taken to avoid mopping the floor with excessive quantities of water, as otherwise some of the solution may work in between the floor and the linoleum, rotting both structures and oftentimes causing foul odors. After the linoleum has been carefully washed, rinsed, and dried, one or more light coats of wax may be applied. These should be well polished.

Reviving a dull finish.—If wax is not used and the surface becomes somewhat dull, it may be restored by a very light coat of linseed oil thinned with turpentine. Sometimes linoleum floors are varnished, but if this treatment is applied, the floor shows dust and footmarks very plainly. Waxing is much more satisfactory.

MAGNESITE FLOORS

Magnesite floors can be obtained in various colors and are quite attractive in appearance. The floor is made like concrete, in one

[1] For the care of linoleum see Information and Suggestions for the Care of Buildings under Control of the Treasury Department, issued by the Office of the Supervising Architect.

piece, and may be continued on into the baseboard. The material is waterproof, somewhat elastic, durable, and fairly easy to maintain. It has the disadvantage of being somewhat difficult to lay and very often cracks. While nonabsorbent of water, it takes up oil very readily and is stained by the greasy solutions; hence in dining rooms and kitchens it frequently presents a bad appearance. When areas have to be taken up, it is difficult to make a repair which is not disfiguring. Magnesite resembles concrete in this respect.

Care.—Magnesite floors may be cleaned by mild soap solutions or nonabrasive cleaning powders. Strong alkalies or acids should never be used.

MARBLE FLOORS

Marble is attractive in appearance, but expensive. Marble floors are somewhat noisy, cold, and hard on the feet, but are durable. The marble blocks are usually laid in concrete and at times will crack or work loose from their supporting base. Marble is an absorptive stone and is stained by grease and some other compounds, which stains are difficult to remove. The high polish on marble can be easily injured by abrasive powders or strong chemical solutions and the beauty of marble is very often completely destroyed by careless handling.

Care.—Marble floors may be cleaned with soap and water or with a mild polishing powder without abrasive qualities. All soap must be thoroughly removed by rinsing. Acid should never be applied under any circumstances; for while it whitens marble on its first application, it leaves the surface rough and ruins the finish.

RUBBER FLOORS

There are various types of rubber flooring on the market, some of which are very attractive and have many excellent features. Rubber floors are durable, elastic, fairly soundproof, and comfortable to the feet. It has been noted that in some cases the rubber tiles have a tendency to curl up and loosen at the edges, which has been a source of annoyance. The chief objection to rubber floors at the present time is the initial cost, which is high in comparison with other materials.

Care.—Grease attacks rubber causing it to swell and become soft; gasoline, kerosene oil, and similar compounds also have a destructive action. Rubber floors should be washed with soap and water, and if necessary some mild scouring powder may be used.

TERRAZZO FLOORS

Terrazzo floors are composed of a mixture of concrete with small bits of marble. The surface is ground down and finished with a high polish. Floors of this type have the inherent advantages and disadvantages of the stone of which they are composed, and the binding

material, which is the concrete. It is frequently observed that small pieces of the stone are dislodged from the floor proper, leaving holes which present an unsightly appearance and become filled with dirt. Many terrazzo floors are very handsome in appearance, and at the present day are frequently laid so that they are divided into small blocks by strips of brass set on edge which tends to prevent cracking, a common difficulty with floors of this type.

As the terrazzo floor is usually laid like concrete it has the advantage of one piece of construction, which can be extended upon the baseboard, and it is fireproof.

Care.—Terrazzo floors should be washed with soap and water, or with a small amount of nonabrasive scouring powder. Acids and alkalies are harmful.

FLEXOTILE

Flexotile floors are composition floors composed of small pieces of stone, usually marble, and held together with magnesite. Such floors resemble terrazzo, except that the binder is magnesite instead of concrete.

Care.—Alkalies and acids are destructive, and washing powders containing rough abrasives must be avoided. Floors of this type should be cleaned with soap and water, and when necessary a scouring powder without abrasive action may be used.

TILE FLOORS

Tile is similar to porcelain or eathenware and may be glazed or unglazed. Glazed tile has a high finish resembling glass. Tile floors are handsome and have much to recommend them. They have the disadvantage of cracking, are cold, and hard on the feet; but in certain parts of the institution, such as operating rooms, laboratories, lavatories, bathrooms, toilets, and kitchens, etc., are the most satisfactory floor yet devised.

Care.—Tile surfaces are particularly damaged by abrasive cleaning powders, but stand ordinary solutions very well. Tile floors may be cleaned with soap and water or with a cleaning powder containing a polishing agent which will not scratch glass. It will be noted that in practice the care of marble, terrazzo, and tile floors is practically identical.

WOODEN FLOORS

Wooden floors fall naturally in two classifications—those composed of hardwood and those of the softer and less durable varieties. Hardwood floors are attractive in appearance, somewhat elastic, and correspondingly easy on the feet; they do not produce dust and are fairly durable. Sections can be taken up and replaced without disfigurement. The disadvantage of hardwood floors are original

expense, absorbability, inflammability, and the amount of care required to maintain them in good condition.

Finishing.—Oak in its natural condition is porous and coarse in grain; hence it should, first of all, be treated with a filler. After the filler has been applied and set, a coat of spar varnish thinned with turpentine, in the proportions of 3 pints to a gallon, should be applied, then a second coat of pure spar varnish, following which two coats of wax should be given, each to be well rubbed and polished. Some authorities prefer to apply one or two coats of shellac after the filler and then the varnish and wax. Floors so treated have a thin protective film over the entire surface, composed of varnish and wax which is waterproof but rather delicate in texture and which must be safeguarded accordingly.

Care.—Hardwood floors should be cleaned usually by going over them with a cloth moistened in furniture polish. If they are too badly soiled to be handled in this manner, a little pure water may be applied on a clean mop and the floor then thoroughly dried, after which it should be repolished with a small amount of furniture polish or wax.[2]

The wax coating is insoluble in water, and in hospital wards dust and grit in time become mixed with wax so that the surface in places where it is not traveled upon, especially in the corners, becomes gradually darker in color and most unsightly. As this mixture of wax and soot can not be removed by ordinary cleaning processes, the attendants will frequently state that these stains are indelible, but if the surface is scraped with the edge of a coin it will be noted that the dark layer can be easily removed.

It is evident from the above that the wax should be applied in very small quantities. and only when absolutely necessary to restore the original polish. which at best should be of the eggshell type rather than a brilliant piano finish such as is left by varnish when used without wax.

When the old layer of wax must be taken off, turpentine will be found to be useful or a mixture of gasoline and carbon tetrachloride in equal parts. Usually in such cases the varnish will also have to be removed and the floor done over according to the method above described for finishing.

In revarnishing or waxing floors it is essential that they be perfectly clean and of uniform color before the wax or varnish is applied, as otherwise the spots will show through and the whole floor look worse than it did before it was treated. In removing the thick accumulations of wax and varnish from old hardwood floors the electric sanding machines will be found to be the most advantageous; and if they are not available, some sort of varnish remover will be necessary,

[2] Well-waxed floors may be carefully washed with a neutral soap and water solution when necessary, as the wax protects the finish.

as all of the original finish must be completely taken off before starting in to put on the new varnish or shellac. Then the floor must be carefully scrubbed so that all dirt and marks are removed. Next rinse well and dry. Use a filler or stain if necessary and follow with varnish and wax.

Softwood floors.—Softwood floors when new should be stained and then given two coats of spar varnish, as above described, and finally two coats of wax well rubbed in and polished. The after care of such floors is exactly the same as that of the hardwood floor.

All softwood floors which have been oiled soon become dark in appearance and the management of such a surface is extremely difficult, as the discoloration is permanent. The practice of painting softwood floors is also highly unsatisfactory, as the paint comes off where there is the most wear and the bare spots contrast strongly with the painted areas. Usually the best method of handling such a floor is to cover it with linoleum. If this is impracticable, it may be thoroughly cleaned, then stained and varnished, with fairly satisfactory results.

SELECTION OF NEW FLOORS

Where a new floor is to be laid and there is an opportunity to make a selection, many things must be considered. The ideal flooring for hospital purposes is not yet available, as all types have certain advantages and disadvantages. Unfortunately the amount of funds available must in many instances be the dominant factor in making a choice. In comparing the different kinds of floors available, the following points should be considered:

Appearance.—The condition of the floor after several years of service must be given greater weight than its attractiveness when only recently put down. In composition floors, the colors may fade or become washed out and the effect of wear and tear on the surface is most important.

Sanitation.—Frequently floors are described as being sanitary or insanitary, the points in mind being chiefly whether or not they will absorb water and whether the surface is smooth or rough with a tendency to catch and retain dirt. The terms are not very scientific, although they may be convenient. In considering floors which are laid in small sections or places, such as tile, rubber, etc., the nature of the cement which is used must also be taken into account, as there are a great number of joints in such floors and every joint is a possible place where moisture or dirt may accumulate.

Maintenance.—This refers to the amount of work required to keep the floor clean, and also to the need of frequent revarnishing, rewaxing, and the like.

Noiselessness.—This is an important item, especially in hospitals, and depends to a certain degree upon the elasticity of the materials composing the floor and whether it can be thrown into vibration.

Comfort.—By comfort is meant the effect on the feet of the users, which is dependent to a certain extent upon the elasticity of the floor, the nature of the surface, and whether the material is a good or poor conductor of heat.

Durability.—This word covers a rather wide field. The floor must be able to resist the destructive effects of friction and violence from hospital use, which includes the scratching of shoe nails, and the wear from the wheels of dressing carts, stretchers, and the like. Sand and grit carried in by the feet of patients and visitors will have an abrasive action. If organic material is used in the floor, the effects of repeated application of water and sudden changes of temperature must be kept in mind as factors likely to result in decomposition.

Under the heading of durability also comes the ability of the surface to withstand the action of strong acids and alkalies which may be either accidentally spilled on it or used by ignorant attendants in the process of cleaning. Another quality properly classed under this heading is whether or not the floor will readily take up and retain colored solutions such as dyes or grease.

Fire resistance.—Incombustibility is a valuable quality.

Ease of repairs.—Most hospital floors sooner or later have to be disturbed to get at plumbing, wiring, or for other reasons. The facility with which this can be accomplished and the possibility of replacing such areas without showing disfiguring marks may make one sort of flooring more desirable than another.

Continuous availability.—The amount of time which may be required at regular intervals to refinish the floor, during which it can not be used, must be taken into account. This is a rather serious objection to materials which require frequent varnishing or painting, as the surface must be prepared, treated, and allowed to dry. In corridors and hallways, continuous availability is of more importance than in private rooms.

MAINTENANCE OF WALLS AND WOODWORK

WALLS

Cleaning.—The cleaning of walls offers many problems, and unless it can be thoroughly done had better be left alone, as partial attempts to clean such a surface usually result in streaking, which is more disfiguring than the original condition. Sometimes walls may be dusted with hairbrushes or a light cloth with advantage, but this should always be tried in an inconspicuous place before starting on the more prominent areas.

Washing.—The washing of painted walls is more or less an art unless the surface has a good enamel finish which is able to withstand soap and water. Ordinary paint, when cleaned by untrained hands shows marked irregularities of color, and not infrequently the paint is entirely removed in places. If the wall is to be repainted, this is of course, of small moment; but if not, one must proceed with care. Here again it is best to experiment on some out-of-the-way spot to see just what methods are applicable.

If the paint is of the ordinary type, only very mild solutions of soap can be used, and frequently they will be found ineffectual in removing the accumulations of grime and soot.

Color.—The selection of color is important, as it is essential that the walls of a hospital be light in tint so as to give the rooms and corridors a bright and cheerful appearance

The ceilings may be white or cream and the walls somewhat darker in shade, a buff, sandstone, or light tan being usually quite suitable; and as a contrast to this the baseboards and other parts subjected to unusual stress and likely to be slopped with wash water, may be given a darker tint, such as terra cotta. The three shades for ceilings, walls, and baseboards should harmonize. It must be remembered that they will all assume a somewhat darker hue as time goes on. As the lower part of a wall is subject to more wear and tear than the higher section, there is always a temptation to put a darker dado here, so that dirt, especially hand marks, will not show so plainly. This plan is sometimes desirable, but especial care should be taken not to made the dado too dark, as such shades are most unattractive and give the space so treated a gloomy appearance. The lighter tints amply repay in additional cheerfulness for the extra labor required to maintain them in a proper condition. Dadoes composed of various colors in the polychrome effects will give the same results and are much more attractive.

Another excellent plan is to place a light strip of molding about 5 feet from the baseboard or floor along corridors and stairways. With washable paint it is comparatively easy to wash up to the molding below which most of the soil occurs, and the remainder of the wall may be left without treatment.

It has been found that many of the finger marks on the walls along stairways are placed there by patients who require some assistance when going up or down stairs. A wooden rail fastened to the wall will obviate the difficulty to a great degree, and such a rail is also a help to those who are crippled.

In selecting colors for hospital interiors the greens and grays are especially to be avoided, unless the light is very intense, because when these shades grow darker, as they will in time, they are extremely

dull and depressing. It is usually advisable to try and carry out the same color scheme throughout the entire institution.

Repainting walls.—When repainting walls a great deal of care is required in preparing the surface. All cracks should be cut out and filled with one of the special plaster patching materials now on the market. In repairing, especial pains should be taken to have the patch match exactly with the edge of the old surface and to have it smooth and true throughout. If the plaster has been patched previously and the job badly done, which is often the case, the old patch should be torn out and replaced correctly. Finally, the whole wall should be thoroughly sandpapered to secure a smooth and uniform surface.

Next a coat of white lead and oil should be applied, and after this coat of lead and oil the color of the tint desired. The third coat will consist of half-lead paint and half enamel or pure enamel, and the last coat of pure enamel. All undercoats should be smoothed.

Walls and ceilings when finished as above described will stand up for long periods and may be washed at least once a year. This type of treatment is decidedly expensive, but the results obtained amply warrant the outlay, especially when labor costs are high. Too much emphasis can not be laid on the preparation of the wall before starting in to paint, as the glossly finish of the work as described makes any irregularities show up very prominently.

Reference has been made to polychrome dadoes; these are very handsome and when covered with two coats of transparent enamel are extremely durable.

WOODWORK

Hardwood.—Hardwood trim is always attractive and economical to maintain.

Cleaning.—Hardwood is usually varnished and must be handled accordingly. It may be wiped off with a rag moistened with furniture polish; or if the grime has become too thick to be removed in this way, it may be cleaned with a sponge and cold water and then brightened by applying furniture polish. In general the treatment of hardwood trim is the same as hardwood floors. In revarnishing woodwork it is frequently necessary to remove the old varnish, especially if the revarnishing has been performed several times before. Here again the same condition prevails as with floors. Ammonia water is a good varnish remover for porous types of wood.

Cleaning painted or enameled woodwork.—Painted woodwork is cleaned by using mild solutions of soap and water with a sponge. Alkalies, especially ammonia water, scouring powders, and the like very quickly remove the paint and ruin the surface. Great care must be exercised in this respect. The worker should be furnished with a soap solution of the proper strength in a basin with a sponge

and a pail of clean water. Use 1 part by weight of pure white floati soap to 20 parts of water. Dissolve the soap by heating and th cool. The practice of rubbing the sponge directly on the cake soap results in varying and unknown proportions of the cleani agent.

Refinishing.—Ordinarily, if the trim is kept in proper conditi by scrubbing, it will be found that when it is necessary to repair most of the old paint has been removed and no special preparati is required. However, if repeated coats of paint have been applie the surface will be rough and uneven, showing very plainly the slip runs, and accumulations of excess paint which have formed in t corners and on the horizontal surfaces of the panels and molding In such cases it is especially essential to remove the old paint ar secure a smooth surface before repainting. This may be done b burning off or by the use of paint removers; then the entire surfa must be thoroughly sandpapered, so as to secure a perfect finish.

Any defects which exist in the wood must be repaired; nail hol and cracks should be puttied; deeply grooved or scarred portion should be replaced with new material. Repainting badly deface woodwork simply accentuates the existing defects.

New hardwood may be filled or stained, giving one coat of shella and two coats of varnish, all coats to be smoothed. Old woodwor may not require the stain or filler, and it should be treated accordingly

Painting woodwork.—Two undercoats should be applied with final finish of two coats of enamel paint, as described for walls. A coats should be smoothed and the last coat left with a flat finish.

It is needless to say that in selecting woodwork for a hospital, or i fact for any sort of a building, every effort should be made to choose type of trim which is free from a tendency to collect dust or dirt, an the design should be such as to facilitate any cleansing process rathe than to make it difficult. Practically this can be accomplished by th avoidance of moldings, paneling, and the like. Fortunately a plain type of finish is now becoming fashionable in public buildings. If highly ornamental result is demanded, this may be secured by the use of contrasting woods of different natural colors and grains rather than by the employment of ornamental moldings, carvings, and recessed panelings.

For hospital use, then, the wood trim should be flat on the surface and free from any ledges or grooves.

DOOR PLATES

The doors to wards and other parts of the building which are much used quickly become scuffed around the bottoms where they are frequently kicked, and soiled near the handles from the constant application of dirty hands.

Kick plates of brass[3] along the bottom will protect this part of the door, and frequently glass or brass push plates are placed near the locks to avoid soiling the paint work. Another method is to paint a black strip on that part of the door which is most touched by hands so that the finger marks will not show so plainly.

The maintenance of the push plates is something of a problem, as the process of polishing them is laborious, and the polish usually stains the paint at the edge.

Recently the plan of placing a thin beveled strip of solid walnut about 4 feet long and of suitable width on the door has been tried with very great success. The wood is left in its natural condition but finished with oil, and requires only wiping off with a little furniture polish from time to time. These hardwood plates are attached with round-head brass screws, and on a white door they make a rather handsome contrast. The maintenance trouble is practically nil.

PAINTING

Most hospitals do a certain amount of painting with the aid of the regular station force. If these employees are not regularly trained painters two very serious defects have frequently been noted in their work:

(1) The unskilled worker is very likely to drop or daub paint on surrounding objects and usually neglects to wipe up these spatters while they are still soft.

The writer has for years been observing bathtubs, floors, radiators, tile walls, and other places in hospitals which have been disfigured by unskilled and careless painting. A particularly glaring fault of the amateur is to get paint on windowpanes or transoms while attempting to repaint the sash.

(2) The other condition which frequently obtains is to neglect to prepare properly the surface, and merely to daub on one coat after another so that the woodwork or walls in time have a very rough and uneven surface most disfiguring and very evident to the casual observer.

If the above conditions are carefully guarded against, very satisfactory work can be done by the station force, especially those men who show themselves to have some real aptness for this particular calling.

Paints in general.—Paints fulfill a dual purpose; that is, they are ornamental and protective. The fluid part of the paint is called the vehicle; the solid constituents are the pigment. Mixtures of linseed oil and white lead in various proportions make a very satisfactory

[3] These plates are now being made of cork composition which is apparently ideal for the purpose. This material, however, is somewhat expensive.

application for many purposes, and some combination of these two substances is the basis of most good paints.

Linseed oil when exposed to the air in a short time forms a hard shiny film which is resistant to water and protects the surface to which it has been applied. This hardening process is not due to evaporation but to a chemical change resulting from oxidation. If white lead or a similar pigment is added to the oil, the film is harder, more durable, and forms a better protective coating.

In brief, this is the chemistry of paint. However, there are many interesting and intricate problems concerned in the application of the art to the various demands of modern industry, and many other substances are added to the paint proper for various purposes. In order to make the lead and oil penetrate more easily or flow more freely, diluting fluids such as turpentine, gasoline, and kerosene may be added. If it is desired to have the paint harden more rapidly, compounds called dryers are incorporated; but there is a limit to the use of dryers, and too much may defeat the object attempted. Paints are colored by various substances which are added in the quantities required to produce the desired shades.

The proportion of oil, lead, and turpentine will vary with the nature of the work and the number of coats used. Suggested formulas for various types of painting and for the different coats will be found in the appendix. For outside work when penetration is desired raw linseed oil is used. Boiled linseed oil is thicker and gives more gloss but penetrates less readily.

The mixing of the ingredients together is laborious and time consuming. Small mechanical mixers driven by electric motors are now available and will be found to be a great convenience where any considerable amount of work has to be done, saving a great deal of time and producing much more uniform results.

Ready-mixed paints.—Ready-mixed paints are on the market and for small jobs may be very convenient. Some of these prepared compounds are of an inferior grade; others which bear the names of well-known manufacturers will be found to be quite satisfactory.

Selection of materials.—In painting it is well to use only the best materials, because the labor cost is the same in applying an inferior product as it is in using a high-grade one, and the cheaper paint will not wear as long as the better article.

In deciding on the ingredients to use and the correct proportions of each, it will be frequently noted that there is a wide difference of opinion among professional painters. Very few of these workmen have made a scientific study of the subject, but have been trained to follow certain procedures rather blindly in which they have great confidence.

The correct mixing and application of paint to surfaces such as plaster walls, woodwork, stone, brick, concrete, and the like, involves many intricate physical and chemical problems, most of which are entirely beyond the mental capacity of the workmen. This should always be borne in mind when difficulties arise in painting work and only the most competent authorities should be consulted. It is not at all wise to assume that because a man is a painter he knows all there is to be learned on the subject.

White lead is an excellent base for outside painting, but has the objection that when used inside for white work it gradually turns yellow, because of the formation of a yellow sulphide of lead due to the presence of sulphide of hydrogen in most houses from various sources, such as furnaces, the burning of illuminating gas, etc. This is of no particular importance in the deeper shades or when the lower coats are covered by enamel or varnish. For white inside work, zinc white is often used instead of white lead, because it remains white even if exposed to gas fumes.

Preparation of surfaces.—Reference has already been made to this subject under the description of refinishing walls, and the same conditions apply to painting of all kinds. It is most essential that the surface be properly prepared for the paint or varnish that is to be placed thereon.

First of all comes the removal of all dust and grease. This may be accomplished by dusting off, followed by scrubbing, usually with soap and water. In the case of metal objects, grease may sometimes be best removed by wiping with gasoline. Before painting any surface it must be absolutely dry. The next step in the preparation will depend upon the nature of the object. This has already been described as far as old walls and woodwork are concerned. New walls will have to be sized. The formulas for sizing will be found in the appendix, pages 292 and 293.

Concrete and brick work will require appropriate treatment. All the old finish should be thoroughly removed from metallic objects such as bedside stands, operating tables, and the like, unless it is perfectly smooth. If the enamel is only chipped in a few places, these spots may be carefully smoothed down with sandpaper, but usually it is best to remove all previous paint, varnish, or enamel with appropriate chemical removers, or blow torches, and to get a perfectly smooth and clean surface before starting the work.

This preparatory work is so frequently neglected, especially by amateur workers, and various articles in hospital use are so often covered with repeated coats of white enamel resulting in a finish resembling alligator skin, that the matter has been especially stressed here.

Brushes.—When applying paint it is necessary to have a good brush of the size and type required. There is no economy in buying poor brushes; and as good ones are expensive they should be well cared for (see p. 294 of the appendix).

Sprays.—In commercial work a great many articles are painted, varnished, or lacquered by sprays, and under these conditions the spray is very successful. However, on walls and woodwork, in rooms and wards, spray painting has very decided limitations, and so for ordinary repair jobs the brush will be found more applicable.

Protection of floors and other objects.—Before beginning to paint it is most essential that a sufficient supply of drop cloths be available to cover up all floors, desks, furniture, radiators, and other objects which might be spattered. Special attention should be given to protecting electric-light fixtures, which are often overlooked. If regular cloths are not available, old sheets and newspapers are useful substitutes.

The workmen should have a liberal supply of clean rags and turpentine always at hand so that paint smears accumulating on window-panes, electric fixtures, transoms, or other objects not covered, can be cleaned off immediately. If in spite of the floor cloths, some of the paint reaches the floor, it should be wiped up while still soft and easy to remove. The men should be trained to remove surplus paint while they are on the scaffolding or ladder and to make a careful survey of the place for such marks or spots before every quitting time. The job should be frequently inspected to see that the workmen are carrying out these instructions, as a great amount of labor will be necessary to remove paint which has hardened. Fresh marks on window glass or transoms can be very easily removed by a safety razor blade.

Number of coats.—It is better to apply two thin coats than one heavy one. Each coat should be of slightly different shade so that it may be easy to tell what area has been covered by each coat and thus avoid "misses."

Sufficient paint for the entire last coat should be prepared at one time so as to insure that it is all of the exact color shade.

Straining.—A scum will form on the surface of paint which is allowed to stand for several days. When the paint is stirred up, small pieces of this film, known as "skins," will remain. These small bits of partially dried paint will give the work a rough and unsightly appearance; hence all old paint which contains material of this sort should be carefully strained.

Time to paint.—Outside painting should always be done in warm weather and on dry days. Attendants who are given painting to do should be especially cautioned about thoroughly washing their hands before eating.

Stippling.—If the paint used gives a high glossy finish which is objectionable, it may be stippled. This is done by patting the last coat just before it has set with a stippler brush, which throws the paint up into minute irregularities. The surface roughened uniformly in this manner is pleasing to the eye and has no glare. It requires some practice to produce an even appearance in stippling.

Polychrome effects.—Reference has been made to polychrome dadoes. These are produced by painting the dado a light shade, say of green. After this coat has dried a second darker coat of green or some other appropriate contrast color is laid over it. While the second coat is still wet it is patted with a crumpled wad of newspaper, sponge, or something similar, which removes a part of the darker paint, resulting in a more or less uniform mottled pattern. After the second coat has dried, two coats of transparent enamel are applied. These polychrome treatments are very effective and attractive when properly done, but call for special skill and should not be attempted by amateurs.

Varnishes.—Varnishes are composed of gums, resins, or oleoresinous substances dissolved in a volatile vehicle. On drying they leave a hard, shiny finish resistant to water. There are many different types of varnish on the market devised for special purposes. A high-grade varnish is high in price on account of the cost of the materials utilized.

Varnishing.—Varnishes are transparent and tend to exaggerate any inequalities of the surface beneath; hence it is especially necessary to use great care in the preparation of the object which is to be treated. The temperature of the room in which the work is done is important, and it should never be below 70°. Care must be taken to keep dust away from the varnished surface until it is thoroughly set, and all brushes used for this work must be expecially clean and the bristles tight. In high grade work repeated coats of varnish are applied, and each one is rubbed down to a smooth finish, either with very fine sandpaper or pumice stone and water, and with a felt pad. To do a good grade of varnishing, such as is found on carriage bodies and the like, is far beyond the skill of the ordinary amateur, but work of the simpler sorts, such as doors, desks, and floors, may be attempted by one who is reasonably careful and painstaking.

Enamel and enameling.—Enamels are similar to varnishes, but usually contain a certain amount of coloring materials, so that they are more or less opaque. They dry with a hard brilliant finish which should have good wearing qualities and resistance to water. Enamels have the physical characteristics of a mixture of paint and varnish.

For enameling, the surface must be carefully prepared. (See Painting.) As enamels have rather poor covering power, it is wise to

apply two or more undercoats of white lead and oil of the tint desired in order to secure a uniform underbody color; then one or more coats of enamel may be added as desired.

Pyroxylin lacquers.— During the past few years a new finish similar to varnish, but more resistant to water and harder in texture, has been placed on the market. This has been widely used on automobile bodies and has proved most admirable for the purpose. The material is usually applied by spraying and drys in a very few minutes, which is a great saving of time, especially in commercial work. The exact constituents of these new coatings are known only to the manufacturers, but they are supposed to be composed largely of a pyroxylin base dissolved in ethyl and butyl acetate. Such lacquers in a colorless form are now much used as a finish for furniture and have proved highly satisfactory. This material would be excellent for many uses about the hospital, but at the present time it seems to be difficult to get it to adhere to certain substances, especially old painted surfaces and the like, which has the effect of limiting very markedly the use of these combinations in repair work.

Cost of painting.—Data on the amount of paint required to cover a given amount of surface and also the amount of labor involved in various types of painting will be found in the appendix.

Contracts.—In drawing up contracts for painting care should be taken to cover the following points:

(1) The extent of the work should be fully and carefully described.

(2) The preparation of different kinds of surfaces should be given in detail, including the dusting, cleaning, scraping, etc.

(3) The number of coats and the treatment of each coat, such as rubbing down, stippling, etc., should be described.

(4) The contractor should be required to give the name and brand of the different materials he proposes to use, and these should be delivered on the premises in sealed containers.

(Sometimes it is wise to have the contractor state the amount of material which will be required and have him deliver these items to the station, which become the property of the institution whether they are needed or not. This prevents any stinting of expensive ingredients.)

(5) It should be stated whether or not the painting is to be carried on in conjunction with the regular work of the institution and in such a manner as not to interfere unreasonably with the same.

(6) It should be definitely stipulated that all furniture, floors, windows, fixtures, and the like are to be carefully protected and that all paint spatters are to be removed and the place left in clean and good condition.

CONCRETE WORK

It is entirely practicable for the hospital employees to do a certain amount of concrete work, such as extension or repairs to sidewalks, construction of gutters, and repairs to concrete floors.

Proportions.—The proportions of concrete are usually given with the amount of cement first, sand next, and rock or gravel, often referred to as "aggregate," last; thus, 1 : 3 : 6 mixture means 1 part cement, 3 parts of sand, and 6 parts of broken stone or gravel by volume. A bag of Portland cement is considered as 1 cubic foot and weighs about 94 pounds. The proportions used vary according to the nature of the work and the stress which it will have to stand. The larger the percentage of cement, the more durable will be the finished product. For ordinary work it is customary to use 1 part of cement, 3 of sand, and 6 of aggregate.

Mixing.—The ingredients may be mixed either by hand or machinery, but the mass should be poured very quickly after it has been prepared, as it sets rather rapidly. If prepared by hand the cement and sand are turned over until the mixture assumes a uniform color, then the aggregate is added, thoroughly mixed, and last of all sufficient water is worked in so that the fluid part of the mixture is about like a thick cream.

Concrete is usually poured into wooden forms, which should be greased or thoroughly wet so that they will separate readily from the work. It is customary to reinforce the concrete by incorporating iron bars or rods in the structure which serve to prevent breakage and cracking. For flooring construction light chicken wire is quite effective.

Pouring.—When concrete is being poured it is necessary to work it with a shovel or slicing tool so that the material completely fills the forms and the heavier parts are forced into close apposition. This working, or puddling, of the fluid mass is very important.

Time to set.—The forms may be removed within 48 to 72 hours, and within 3 to 4 days the work will have considerable durability, but it should not be subjected to heavy loads before four weeks. The greatest strength will not be attained until the end of six months.

Finishing.—There are various methods of finishing concrete, the simplest being to bring the top down to a level surface by suitable working and then to smooth it off with a float, trowel, or similar instrument.

Frequently a separate topping or finishing course, composed of a rich cement and sand mortar (1 to 4) about ½ inch thick, is applied before the concrete has become too much set. This mixture is usually troweled to a smooth and dense finish or may be marked by appropriate tools into blocks, regular depressions, or the like.

A brushing or floated finish is often used. The forms are removed as soon as the concrete has become self-sustaining—ordinarily in about 24 hours. The surface is thoroughly wet with water and rubbed with a coarse carborundum stone until it is uniform and free from markings or glaze. Then a mixture of cement and sand, equal parts with 5 per cent of dry hydrated lime, is worked up with water to the consistency of a thick paint and applied by dashing on with a brush. This coating is then well worked into the surface with a suitable tool, usually of wood, and sprinkled with water, if necessary, then brushed with a clean damp brush, leaving a uniform coat which shows the brush marks slightly.[4]

For sidewalks the finish should not be too smooth. One method is to let the work practically set—that is, to allow it to stand for from two to eight hours, depending on the temperature—and then rub down the surface with a wood float using a rotary motion. Finally make a narrow smooth edge with a 2½-inch edger, leaving the center rough.

Chemical solutions known as "hardeners" are on the market and are often applied to inside concrete floors. This treatment is beneficial and prevents the formation of dust to a certain extent.

Thickness required.—This depends to a certain extent upon the foundation. Sidewalks built upon sand or gravel need only be 4 inches thick, and driveways 6 inches. The concrete need not be reinforced. This does not hold true for clay, however. If the work has to be built on clay, a foundation of 6 inches of cinders well tamped down should be first laid.

Season to work.—It is inadvisable to pour concrete in cold weather, as freezing may damage it. Under cold-weather conditions the materials may be first heated and the finished work protected by covering with straw or horse manure. After setting two days there is not much danger from frost and none after six days.

Water proofing.—Concrete itself is not waterproof, but may be made more or less impermeable to moisture in various ways. One method is to add chemicals to the mixture, such as alum and soap which unite to form a compound which fills up the pores. More often, especially in cases of foundations, the perfectly dry concrete, after being heated, is treated with several coats of hot asphalt with alternate layers of heavy paper or felt on the outer side.

Repairs to old concrete.—In attempting to repair or replace broken places in old concrete, it is difficult to get the new work to adhere to the old. The best method is thoroughly to clean the old surface of all grease and then to roughen it up with a wire brush or similar instrument; it may also be chipped slightly; next apply a coat of

[4] Concrete treated in this way should be wet down once in 24 hours for from three to six days. In hot weather the work should be protected from the sun for six days by burlap or similar coverings.

cement mortar composed of one part cement to one or two parts of sand and then immediately pour the new concrete on the surface which has thus been prepared.

Contracts for concrete work.—When concrete is to be laid by contractors, the specifications should be complete and cover the following points:

(1) A full description of the amount and location of the work.
(2) The quality of the materials.
   (*a*) The sand should be sharp, clean, free from dust or vegetable loam, and not too fine.
   (*b*) The gravel or broken stone should not contain dust, soil, or other foreign materials. The size should be specified.
   (*c*) The bidder should furnish the name of the brand of cement to be used.
   (*d*) The mixture or different mixtures should be definitely described by volume.
   (*e*) The finish of the work should be described and also whether or not reinforcement is to be used.
   (*f*) The contractor should be required to protect the concrete until it may be used with safety.

Storing cement.—Cement will deteriorate rapidly if exposed to air and moisture. It should be stored in a tight building in the dark, away from all dampness.

Miscellaneous Mechanical Equipment

POWER PLANT

Boiler house.—The boiler house is likely to be neglected at small stations and to present a rather unsightly and disorderly appearance. It is frequently used as a repair shop and a storeroom for discarded articles, resulting in great untidiness. At the larger hospitals where the buildings are of a more modern type and better finished on the inside, this is not so often noted.

A visit to the power plant of some of the larger manufacturers will demonstrate what can be done in the way of improving this section of the hospital. The walls are usually tiled, and it will be observed that the brass is highly polished, the gauges and other instruments are handsomely mounted, and the place is meticulously clean. The chief engineer will have a desk, and the interior will be maintained in excellent order. Such conditions can not always be duplicated fully, but may be attempted in part; and in any event the boiler room can be clean and orderly with the bright work shining and dust and soot removed as often as is necessary.

Lockers should be provided for the men's clothing, and all laboratories, toilets, showers, and the like should be put in first-class repair and maintained in good order. If the walls are not plastered, this should be attended to.

Boilers.—The horizontal tubular boiler is composed of a shell with tubes running from end to end. Boilers of this type are arranged so that the heat usually passes first under the boiler from the front to the back and then to the front again, over the top, and finally up into the chimney, through the breeching.

Boilers are placed so that the back will be slightly lower than the front, which assures that the height of the water as shown by the gage at the front indicates less than is actually in the rear. All boilers should be fully covered with insulating material so as to prevent the loss of heat.

Glass gauges.—When the boiler is in operation there should be a slight movement of water in the gauge up and down, which indicates that it is working correctly. Should the water be motionless, this should be investigated immediately, as it is a danger signal, indicating that the circulation in the gauge may be stopped and that it does not indicate the true height of water in the boiler. The water gauge should be tested from time to time by blowing the water off through the taps.

Automatic safety valves.—Safety valves should be tested at least once a day to avoid any chance that the valve has become adherent to the seat by rust or corrosion, and therefore not effective. When the valve blows off to relieve excess steam, the reading on the gauge should indicate the pressure at which the valve is set to blow. This is a fairly good method of checking up both of these appliances.

Operation of boilers.—It is economical and advantageous to use any exhaust steam for the purpose of heating the feed water.

The actual height of the water in the boiler at any time can be accurately determined by opening the valve on the drain pipe of the water column for a few seconds, then closing the valve and noting the level taken by the water in the glass. As stated before, this level should constantly rise and fall slightly.

Pure soft water for boilers is highly desirable. The use of hard water results in much scale, which collects on the inside and decreases the efficiency of the plant, as heat from the fire can not easily penetrate through this insulating material.

Firing.—The value of coal is determined by the number of heat units it contains. The British thermal unit (B. t. u.), which is the most frequently used measure, is the amount of heat required to raise the temperature of 1 pound of water from 62° to 63° F. The Bureau of Standards will examine any samples submitted and give a report as to what the analysis shows. Whenever possible a record should be kept of the weight of coal used and the amount of water

evaporated. The amount of water turned to steam will vary under different circumstances; but 8 pounds of water evaporated to 1 pound of coal is considered to be very satisfactory.

When firing, it is necessary that the entire surface of the grate be completely covered with live coals. The fireman must be careful that clinkers and dead spots do not form at the back of the grate and at the bridge walls. The whole fire should be strong and level. It will be necessary completly to clean the fire at varying intervals, usually every four or five hours.

Boiler compounds.—There are various compounds, usually composed chiefly of soda or lime, which are added to boiler waters to prevent the formation of scale. Most of them act by precipitating the mineral salts in the water, which then collect like mud, at the bottom of the boiler where they can be blown off. If left in solution these salts would form hard incrustations in the tubes. While scale is detrimental to a boiler, nevertheless, the statements contained in the advertising material of some of the manufacturers of boiler compounds in regard to the loss of efficiency due to different thicknesses of scale do not appear to have a scientific basis.

The ash pit must be kept free from ashes, as many grate failures are due to permitting live coals to lie close to the grate bars, heating them to the point where they give way. Soot and sediment are usually blown out of the boiler tubes with a steam jet, but at times a scraper will be required.

The great danger to a boiler in operation is an unexpected failure of the feed water supply, through an accident of some sort. Should this occur, the fireman should be instructed to cover the fire immediately. This may be done with earth, sand or ashes. The fire should be "pulled" as soon as it is practicable to remove the coals from the grates without causing it to burn more strongly, because of the increased combustion due to the stirring.

Blow-off pipes.—A good deal of foreign material of one sort or another accumulates in boilers. This consists of scale, sediment, or various precipitated substances. To remove this matter, the boilers are blown off. This process consists of opening a pipe connected to the lower part of the boiler which allows the scale and sediment to be expelled by the pressure behind. Blow-off pipes are also sometimes situated at the surface of the water and when opened will get rid of substances which float to the surfaces and can be reached at this point. This blow off is usually performed once every watch of eight hours and is carried on for a few seconds.

Cooling off.—When a boiler must be cooled off this should be done very slowly so that the temperature of the boiler and its settings may be dropped equally, avoiding stresses of various sorts.

Washing.—In spite of regular blowing off, boilers must be washed out from time to time, depending on the nature of the water used. Sometimes it is necessary to perform this operation once a week, but the common practice is to do it about once in two weeks.

When a boiler is shut down for any time it should be completely emptied and then very carefully dried out, using a very small fire. If it can not be treated in this manner it should be completely filled with water in which has been dissolved a supply of washing soda. This alkali tends to prevent the formation of rust in the boiler.

It is important that the boiler plant be kept in a high state of efficiency at all times, as the accumulation of scale will result in undue consumption of coal, and leaks in the insulation of the boiler will result in loss of heat and corresponding expense in operation.

REFRIGERATION PLANTS

If a gas, such as carbon dioxide, is compressed into a closed coil, heat will be generated, as will be shown by a rise in temperature of the coil and the compression pump. If this gas is released and allowed to resume its original volume, heat will be absorbed equal in amount to that which was created by the compression, and the end result, as far as temperature is concerned, will be the same. If, however, when the gas is compressed and hot, it is cooled by running cool water over the coil so as to get rid of the generated heat and then permitted to expand, heat will be absorbed and the temperature of the surrounding apparatus will be reduced. This, in brief, is the principle of all refrigerating machines. A gas, such as ammonia, carbon dioxide, sulphurous oxide, methyl chloride vapor, etc., is compressed, then cooled, and allowed to expand. In the expansion, heat is taken up, thus producing refrigeration. In order to facilitate the withdrawal of heat from the objects or areas desired, brine is usually chilled by the expanding gas and then used as an absorbing medium.

A refrigeration unit consists of a compressor, usually driven by an electric motor; equipment for cooling the compressed gas, generally a coil surrounded by flowing water, although air cooling is practical; a coil or similar contrivance in which the gas is allowed to expand; and, in the larger plants, a circulating brine system through the cold boxes or spaces to be refrigerated.

While the principles involved are simple, the practical operation of refrigeration machinery is rather complicated and at times demands a high degree of engineering skill. The gases are often compressed to very high pressures, requiring accurate adjustment or careful packing of the working parts, such as piston rods, valve stems, valve seats, etc.

The lubrication of the moving parts of the compressor is frequently a problem, especially in ammonia machines. The circulating brine

must not freeze, and for this reason it is usually composed of a solution of water and calcium chloride, which has a very low congealing point.

Ice plants are very much better constructed than they were a few years ago and run for much longer periods without the need of repairs; nevertheless difficulties will be encountered from time to time the solution of which may require the advice of an especially trained mechanic, as refrigeration engineering is now a specialty in itself.

ELEVATORS

In the experience of the writer, elevators require a considerable amount of repairs, although here again the modern equipment is not as subject to breakdowns as that furnished a few years ago. Elevators are severely taxed and are frequently run by persons not familiar with the proper method of handling them. Under such circumstances it is but reasonable to expect failure of the mechanism from time to time.

ELECTRIC MOTORS

Every hospital has a number of electric motors, ranging from the heavy-duty types in the laundry or elevators to the smaller forms used on electric fans. It is imperative that an electric motor, especially those on elevators and dumb-waiters, should be protected by suitable fuses and not overloaded.

The motors on dishwashers are likely to be injured by water from the machine itself, and breakdowns from this source are not uncommon.

LUBRICATION SCHEDULE

A lubricating schedule for the station should be prepared covering every piece of apparatus requiring this attention, and careful provision should be made that all motors and the like are oiled at appropriate intervals, usually by the engineer or his assistant, as this duty can not be left to unskillful or careless attendants.

This schedule should be carefully made out, stating what pieces of apparatus must be lubricated daily, those requiring weekly, and those monthly lubrication, etc., and showing their location on the station. This chart should be checked when the work has been completed by the person intrusted with this duty, and the report should be examined by some competent person to see that the work is being properly carried out.

INSPECTION OF MECHANICAL EQUIPMENT

Certain parts of the mechanical equipment must be inspected at regular intervals, and unless special attention is given to this detail it is likely to be overlooked.

All boilers should be thoroughly inspected at least once a year.

Elevators should be inspected every six months.

Fire equipment should be inspected at frequent intervals, and the acid and soda solution type of extinguisher should be refilled with new chemicals once a year.

Fire hose should be tested from time to time, certainly at least once a year. It should be noted in this connection that the unlined linen hose can not be filled with water and then replaced on the reel. However, the deterioration of such hose is very slow if it is properly protected. Hose with a rubber lining, of course, can be used as often as desired.

FIRE DRILLS

The regulations require fire drills. These drills should be planned with the special idea of insuring that a suitable crew will be at hand to assist in putting out a fire at night, when a considerable number of the regular force may be absent from the station.

At the time of holding the fire drill some part of the apparatus should always be tested, and weekly tests will be found to be very valuable in showing up weaknesses which may not have been suspected, such as misplaced spanners, faulty unions, clogged-up fire hydrants, empty extinguishers, and the like. The fluid used in the small hand extinguishers is very volatile and likely to be lost by evaporation. This solution is also a good solvent for grease, and the extinguishers are sometimes emptied for the purpose of cleaning clothing.

All persons on the station should be familiar with the method of turning in a fire alarm and know where the signal boxes or switches are located. All employees, especially nurses, should be trained in the method of using the hand extinguishers and also familiar with the reversible extinguisher.

Fire drills should be held at different hours of the day and night, and the whole affair made as practical as is possible, trying to foresee the conditions which might prevail when a fire actually occurs.

MOTOR TRANSPORTATION

The amount of motor transportation required for a hospital will naturally depend upon circumstances which need not be discussed here.

Maintenance of motors.—The public at large is so familiar with the care of automobiles and such complete instructions are issued by the manufacturers that details are superfluous in so far as the mechanical upkeep of the different units is concerned.

The chauffeurs should be required to keep the garage and cars clean at all times. When working on closed cars special care is necessary to protect the upholstery, which may be severely damaged by greasy hands, clothing, or shoes of a heedless employee. There

is entirely too much carelessness in this regard in garages generally, and the station force should be especially trained in this respect.

The worker should at all times have accessible a piece of rag or similar material upon which to wipe his hands, and should take special pains not to touch the fenders, body, or inside of the car except when absolutely necessary. This may take a little extra time but is well worth while.

Usually before any repairs are attempted on a closed car the carpet should be removed and the seats carefully covered. The concrete floors of garages should be kept free from grease, as otherwise the shoes of the attendants will smear the carpets every time they step into the driver's compartment.

When dismantling any part of an automobile, a box should be at hand in which all small parts are placed as they are removed. This prevents them from picking up sand and grime from the floor and also from being lost or misplaced. A supply of shallow boxes with suitable handles should be on hand for this purpose.

The chauffeurs should be uniformed when driving, and the car and driver should present an appearance which is creditable to the institution from which he comes. Ambulance drivers are often inclined to proceed at a speed which is entirely unwarranted and unnecessary, and they should be warned against this practice. All drivers should be required to exhibit courtesy and consideration towards pedestrians and other automobiles, and they should be impressed with the doctrine that it is much better to take a little more time in arriving at their destination than to risk the safety of the vehicle they are driving and the public generally by too much speed.

CHAPTER VIII

DISCUSSION OF VARIOUS PROBLEMS IN HOSPITAL MANAGEMENT BY PUBLIC HEALTH SERVICE OFFICERS

Explanation

It has been frequently noted that somewhat different methods of procedure were being successfully used in the various hospitals of the service.

It was deemed advisable, therefore, to request a number of the more experienced officers to furnish comments and suggestions on various controversial points. Their contributions have been compiled under the appropriate headings in this chapter.

It will be observed that a considerable variance of opinion on the part of highly competent authority exists concerning the proper solution of some of the more common hospital problems.

This difference of viewpoint is highly instructive and worthy of serious consideration. A careful study of the discussions which follow will undoubtedly be of great help to the individual officer in determining the course which he deems most desirable for the particular station to which he is assigned.

How the Medical Officer in Charge May Keep in Touch with the Clinical Work and not Become a Lay Superintendent [1]

It is very important that medical officers in charge of marine hospitals keep in touch with clinical work. In large marine hospitals this is not easy, because the duties of the medical officer in charge are wide and varied. He must be a jack-of-all-trades—engineer, laundryman, cook, carpenter, plumber, nurse, doctor, etc.—and supervision of these activities, plus supervision of voluminous clerical work, necessarily takes a large part of his time; but, after all, the purpose of a hospital is maintenance of a place where sick people may be made well, and however necessary all other activities may be they must be subordinate to and support clinical work. A plan that works fairly well for me at the marine hospital in Norfolk, Va., is as follows:

On Monday I inspect the acute medical service of the hospital. At this inspection each patient is seen and his clinical record is examined and commented on. Any interesting physical findings are gone over and studied with the medical officer in charge of the ward. Care is taken not to attempt to take over the treatment of the patient, but only to consult with the ward surgeon, for too much interference by the medical officer in charge with the clinical work of his subordinates is just as bad as too little.

Inspection also covers nursing, diets on the ward, cleanliness of the ward, and any special thing that may be brought to my attention by doctors, nurses, or patients on the service.

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[1] See also page 6, Chap. II.

Tuesday there is a similar inspection of acute surgical service.

Wednesday I operate on selected cases.

Thursday, inspection of genito-urinary service.

Friday, inspection of chronic and convalescent medical and surgical patients.

Thus, each week I see all patients in the hospital and have some clinical interest in them, which is undoubtedly good for me as a doctor, and I hope good for them as patients. At least the plan stimulates ward surgeons to do their best.

Saturday, general inspection of the hospital, particularly laundry, attendants' quarters, garage, engineer's department, and dietetic service.

S. L. Christian, *Surgeon,*
United States Marine Hospital, Norfolk, Va.

The ideal way for the medical officer in charge to keep in touch with the clinical work is to act as consultant in all of the difficult or unusual cases. He then, in turn, can call in his consultant, if he deems it advisable, and thus get the benefit of special counsel. If he has sufficient time he may make sick call in turn with each of his ward surgeons, requesting them to point out the interesting cases for study later.

J. H. Linson, *Surgeon,*
United States Marine Hospital, Chicago, Ill.

Irrespective of the qualifications of hospital medical officers the medical officer in charge should keep in touch with the medical and surgical work of the hospital. He can best do this by seeing in consultation the seriously ill patients and unusual cases or, in a small hospital, by occasionally accompanying the ward surgeon at sick call.

The medical officer in charge should not allow his interest in medical and surgical work to lessen. He should keep himself informed of the progress in diagnostic and therapeutic measures and should perform some surgical operations himself.

The officer in charge should advise junior officers that they are expected to study thoroughly and prescribe the treatment for all cases assigned to them, but that in those cases where the diagnosis is questionable or where special or unusual features are present they are to request a consultation. Discussion of unusual cases or unusual features of any case is very desirable for the patient, the officer in immediate charge of the case, and all other officers at the station.

It is important that the newer medical officers at a hospital receive the proper training in hospital work, and to this end they should be advised that they are in immediate charge of their cases and will be held responsible for their work. They should also perform operations when on the surgical service, the officer in charge acting as assistant or otherwise in an advisory capacity.

At certain stations, particularly small stations, a 10-minute conference of all medical officers before morning sick call is considered a very desirable feature.

G. Parcher, *Surgeon,*
United States Marine Hospital, Portland, Me.

It is oftentimes observed that as a medical officer advances in grade and has more responsibility placed upon him the tendency is for him when placed in charge of a hospital to do less professional work and to become more or less of a plain day superintendent. Such tendency on the part of medical officers in charge of

marine hospitals should be checked. Unless a medical officer in charge actuall performs professional work he becomes incompetent to be in charge of a hospita since, as stated, the regulations require that he be held responsible not only fo the administration of the hospital but for the professional care of the patients Moreover, a physician not only has to be a hard student, but he has to be in actua touch with disease to attempt to keep abreast of the progress made in medicine

W. H. SLAUGHTER, *Surgeon,*
United States Marine Hospital, Cleveland, Ohio.

The necessity for the officer in charge of marine hospitals to keep in touch witl the clinical work is obvious when it is realized that both officially and legally h is responsible. Without a real interest in his profession and a broad genera knowledge thereof, it is impossible for him to provide the proper clinical leader ship. Assuming the presence of these qualifications, the following suggestion may prove helpful:

Frequent visits to wards, operating room, and laboratories, with observatio of patients and methods and discussion with the personnel assigned to carry out the work. Care should be taken to avoid suppressing the initiative of junio officers or damaging their authority and self-respect and efforts should be made to stimulate them.

Frequent staff meetings, with discussion of cases in the wards and current medical literature (certain medical journals are assigned to appropriate officers for review and discussion).

Occasional staff meetings at which selected clinical records are thoroughly reviewed and errors and omissions are pointed out. (This is more impressive if there has been some outside request for information as to the records selected.)

WM. M. BRYAN, *Surgeon,*
United States Marine Hospital, Savannah, Ga.

Policy in Regard to Pay Increases [2]

All employees should be encouraged to qualify themselves for positions carrying increased compensation, and whenever possible vacancies should be filled by promoting individuals who have demonstrated their fitness for such action. However, this plan leaves a certain percentage of employees who have reached their limit in so far as promotions are possible. This includes such positions as stenographers, cost-accounting clerks, clinical clerks, and cooks. Even in such positions the individual becomes more valuable with time as he is not only conversant with the new problems that arise but also with old ones which constantly reappear, and an occasional small increase in compensation certainly adds to the morale and efficiency of such employees. Certainly these will reach in time the point of maximum compensation which should be allowed. Vacancies occurring should not be filled at the same compensation that the older employee was receiving but at a lower salary. This will allow for a gradual increase up to that of the former employee. Aside from the possible beneficial results to the efficiency and morale of employees of occasional increases in pay, I believe that prolonged faithful and efficient service in itself is deserving of recognition.

T. B. H. ANDERSON, *Surgeon,*
United States Marine Hospital, Pittsburgh, Pa.

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[2] See also page 17, Ch. II.

Anyone asking for increased compensation is referred to the table of the civil service. Promotion to a better position is encouraged.

O. H. Cox, *Surgeon*,
United States Marine Hospital, Port Townsend, Wash.

It appears that the only reward for faithful and efficient service is promotion to higher positions. This step, of course, is desirable, but I would not use it solely, and to the exclusion of longevity increase. It must be remembered that the number of applicants eligible for the higher positions is usually far in excess of the actual number of such positions. To allow longevity pay at a certain percentage of the base pay at stated intervals for the more important positions would certainly stimulate effort and cause the individual to take more interest in the work. It would also serve as a reward for satisfactory service.

W. H. Slaughter, *Surgeon*,
United States Marine Hospital, Cleveland, Ohio.

The field classification will settle this question. It is a good plan to encourage employees to work for a better position but not let them get the idea that they should try for things that are out of their reach. An excessive number of employees is bad. The best policy is to pay them well and get an honest return in work from them; they will be happier and do better work. If there are too many of them, they are likely to resort to the offensive reaction of frequently asking for more pay with the slogan that they are overworked. Certainly the pay that our employees are getting is entirely too little, but this is something which Congress will have to rectify; and when the field classification is finally completed compensation will probably be far more satisfactory than it is at present.

M. J. White, *Medical Director*,
United States Marine Hospital, Stapleton, N. Y.

How to Make Staff Meetings Profitable and Interesting [3]

Interests of the patient, hospital, and service are best conserved by discussions of individual cases at staff conferences where summaries or abstracts of cases reported are submitted by junior responsible officers, and interesting, uncertain, or routine conditions are reported and freely discussed with the medical officer in charge acting as preceptor.

Favorable, and particularly unfavorable, progress of patients previously discussed stimulate junior officers to further effort. The completed record of the cases should be reviewed at subsequent staff conferences by the medical officer in charge and frank criticism, considerate reproof, or compliment appropriately administered. Smaller hospital staffs may find it convenient and desirable to discuss each patient freely; hospitals with larger turnover should find it practicable to analyze selected cases. Such conferences tend not only to the completion of full records and stimulation to deeper study of individual cases but to render it necessary for junior officers and the medical officer in charge to be on the *qui vive*.

O. E. Denney, *Surgeon (R)*,
United States Marine Hospital, Carville, La.

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[3] See also page 26, Ch. II.

All medical and dental officers are required to attend staff meetings.

1. At the meetings, questions of general interest to the hospital personnel are presented by the medical officer in charge.

2. Everyone, including internes, is invited to participate in the discussion and to voice opinions and ideas freely and frankly.

3. From time to time cases of unusual clinical interest are presented. Following their presentation there is a round table discussion of diagnosis and treatment.

4. Every effort is made to obtain autopsies. All unclaimed bodies are autopsied, as well as a considerable portion of claimed ones.

5. At staff meetings each death that has occurred in the hospital is reviewed.

6. Whenever practicable staff meetings are held in the autopsy room, and all medical officers, including the Röntgenologist and pathologist, who are not medical officers, are required to attend. At such meetings there is a round-table discussion of post-mortem findings, a review of the clinical chart, and a check up of the clinical data against the post-mortem findings. In this way both diagnosis and treatment are reviewed.

7. From time to time members of the staff present more or less formal, but short, papers or reviews of subjects which they are particularly well qualified to present.

S. L. Christian, *Surgeon*,
United States Marine Hospital, Norfolk, Va.

The prime requisite to make staff meetings profitable and interesting is to have every member participate. Subjects of general interest should be selected and individual members should be given definite assignments to prepare for discussion. The subject matter may properly include anything which has to do with the care of the patients or with the management of the hospital, although naturally questions concerning the professional care of patients should be given the most emphasis.

In conducting staff meetings it should be borne in mind that their object is to improve the quality of the service to the patients. This may be accomplished by increasing the professional knowledge of the individual members of the staff or by correcting existing abuses. Since the objective of the staff meeting is intensely practical, the time should not be consumed by long-winded discourses on abstruse subjects. The members should be encouraged to speak from their own experience or give their considered opinions based upon their general knowledge rather than to attempt to air vague and unproved theories.

J. H. Linson, *Surgeon*,
United States Marine Hospital, Chicago, Ill.

To stimulate interest in the staff meetings generally requires considerable thought on the part of the medical officer in charge. To do this it is well to vary the program from time to time. The subject matter for the meetings should be assigned to the members of the staff by the medical officer in charge several weeks in advance so that sufficient time may be given for the proper presentation of the main subject of the program. Medical officers should be assigned to this duty in rotation.

Cases of death should be made the subject of conference at staff meetings. The ward surgeon in charge of the particular case should read the history, physical findings, treatment carried out, and the autopsy findings where autopsy has been

made. Discussion of the case generally proves beneficial to the entire staff. A study of case records such as those published by Cabot may also be featured at staff meetings. This has been found helpful in stimulating the staff to greater accuracy in diagnosis.

Presentation of unusual or interesting cases and talks by members of the consulting staff may also help in rounding out the program of the meetings. The time at which the meetings should be held is important. It is believed that more interest will be shown by the hospital staff if meetings are held in the day time rather than in the evening, which would require those living at a distance to return to the hospital after the day's work was finished. A day should be selected which is not an operating day, in order that members of the surgical service may be present.

A. D. Foster, *Surgeon,*
United States Marine Hospital, Boston, Chelsea, Mass.

At the Baltimore Marine Hospital we have held weekly staff meetings regularly without omission. They have been attended regularly by all medical officers on duty at the hospital and interest has never seemed to lag. Our meetings have been distinctly meetings of the staff for discussion of things in which they are interested.

To a junior officer is given the responsibility of arranging the programs for the staff meetings. This officer also presides at the meetings. Another junior officer acts as recorder. At these meetings the cases of all patients discharged during the preceding week unimproved and of those who have died, are discussed. Patients in the hospital whose cases have not been diagnosed or who have doubtful diagnoses or present features of special interest, are brought before the staff, examined and discussed. All X-ray films showing pathology taken during the preceding week are exhibited and discussed. Attending specialists present before the staff from time to time interesting or difficult cases coming under their respective specialties. The attending specialist in internal medicine attends the staff meetings regularly and gives talks on various subjects, usually limiting his participation to 20 minutes, although he remains and takes part in discussions throughout the entire meeting. Administrative matters of general interest to the staff are frequently brought up, but the time devoted to their discussion is not allowed to consume time to such an extent as to interfere with the parts of the program of general professional interest. Time not otherwise consumed is devoted to review of current medical journals.

The staff meetings last about two hours and a half and the time usually seems all too short. The meetings are strictly meetings run by the staff for the staff. The medical officer in charge gives advice and makes suggestions and takes part in the discussions and in the presentation of material the same as other members of the staff.

John W. Trask, *Medical Director,*
United States Marine Hospital, Baltimore, Md.

The system in vogue here is for the officer who is to present a case or a paper at the staff meeting to prepare his material carefully and submit it to the clinical director for correction. This is done in order to cut out unnecessary and irrelevant observations and to teach the officer, particularly young officers, how to prepare papers for medical meetings. One of the by-products of staff meetings is the instruction of officers in the proper way of addressing professional bodies.

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As a corollary to this is the teaching of officers how to address lay audiences. This is accomplished by having two lectures each week on personal hygiene for ambulatory patients. These are illustrated by stereopticon and moving pictures. These lectures are given by the young officers of the station. In this way they learn how to make a speech not only in the light but, what is very different, in the dark.

I have found that patients are deeply interested in these lectures and that they ask many questions. I believe that, after about two years' work along this line, we have accomplished something in the creation of a hygienic mental attitude in our clientele.

I do not think that regulations and other administrative matters should be discussed at staff meetings. These should be strictly professional meetings, all official matters being discussed at officers' call. These are held at this station at 8 o'clock each morning, and in this way I have an opportunity to get well in touch with the other officers before the day's work is actually begun. At this meeting, which varies in length from 5 to 20 minutes, administrative matters of all sorts may be discussed.

W. C. Rucker, *Surgeon*,
United States Marine Hospital, New Orleans, La.

Staff meetings in a hospital are, in my judgment, matters of superlative importance. I do not believe that there is anything that contributes so much to the efficiency of the hospital and the morale of the staff as good staff meetings, regularly conducted in accordance with a carefully thought-out plan.

I believe that this is not always possible in small hospitals, where it is probably not necessary; but even in small hospitals I believe some formal sort of a meeting would be advisable regularly, and in large hospitals I believe staff meetings to be absolutely indispensable.

In order to make them a success and to make them both profitable and interesting, it is necessary to plan with care. It is also necessary to bear in mind the object for which they are held and to maintain in their sessions the proper sort of spirit, which is one of constructive criticism with absolute freedom of speech.

The object of all staff meetings in my judgment is essentially a review of the transactions of the hospital and evaluation of the work which is being done therein, with merciless criticism of anything which deserves it.

To achieve this end I think staff meetings should be held at a regular time and a regular hour (not less than once a month); that the attendance of the entire staff shall be rigidly required; that the programs shall be prepared with care; and that they shall be presided over by some person on the staff who is able to carry out the program with a certain amount of snap and vigor. This need not necessarily be the medical officer in charge, and it may vary.

The following is my own preference in the matter of the program:

1. A careful review of the month's transactions with the essential data recorded on a form or else displayed on a blackboard. These transactions should concern not only the general turnover in the hospital but also any unusual events, the number of chronics or long-term patients. The careful report of all deaths, with a brief review of the clinical history and autopsy, and critical comments, particularly on the part of the medical officer in charge.
2. A brief discussion of interesting or unusual cases which may be under treatment, with the presence of such patients before the staff meeting, together with talks and demonstrations concerning surgical and other methods of importance, and perhaps of unusual character which are being tried out.
3. It is important to have a projection apparatus in order that lantern slides may be shown and also a view box for the display of X-ray plates. All of this contributes to the profit and interest of the meeting.

4. I think it is also important for the medical officer in charge always to have a few words to say concerning the news of the station, arrivals and departures of officers, his satisfaction or dissatisfaction over what is going on, and sometimes remarks on various topics of general interest, particularly with regard to general morale.

5. In the staff meetings, I think the younger members of the staff should always be encouraged to talk, and they should be given cases to present and required to present cases. Everyone who has any talking to do must be taught carefully to consider what he has to say and make it as brief as possible so that the meetings may maintain an atmosphere of vigor and not lag.

6. I do not believe that staff meetings should have any place for the review of magazines, or the reading of academic papers on medical subjects at all. Anything of this character should be arranged for in another form of meeting, but not in a staff meeting. The purpose of the staff meeting should be kept always clear in mind, and other things should not be allowed to intrude.

7. Finally, careful records should be kept of staff meetings. The roll should be called when the staff is assembled and absences should be carefully checked. A definite abstract of the proceedings should be placed on file in a book specially kept for that purpose.

8. Follow outline of American College of Surgeons.

C. H. Lavinder, *Medical Director,*
United States Marine Hospital, Ellis Island, N. Y.

The Library Service [4]

The station allotment should include $100 to $200 annually, depending on the amount of its work, for providing fiction, nonfiction, and technical books for patients and employees, and also current periodicals. It is only by having an allotment that the modern books and new editions can be provided. Many patients desire navigation books, and if we have only the old editions or an incomplete set they can not obtain the desired information while they are in the hospital.

M. J. White, *Medical Director,*
United States Marine Hospital, Stapleton, N. Y.

Library service in a hospital is in my opinion a matter of considerable significance. To maintain a satisfactory library service is by no means inexpensive. Such a service never works well unless it is in the charge of some one more or less trained for the purpose. While books and papers may be secured by gift, yet the expenditure of a certain amount of money for books, magazines, or papers, is necessary for any library service of real value. Material given is often unsuitable, and unless looked over by some one competent to do so is never made use of to any advantage.

Of course, loss of library books must be guarded against to some extent, but one should never make the mistake of safeguarding books and magazines so carefully as to prevent their being used. Patients will not go to a great deal of trouble to get them. A certain reasonable loss is to be expected. Service in the wards for bed patients adds much to a library service, and some competent person to suggest or direct the reading for patients is often of great help.

There is a considerable demand among the patients for nonfiction of rather a high character. I think this should be supplied if possible, and I think every library service should have a reasonable number of good books of reference.

C. H. Lavinder, *Medical Director,*
United States Marine Hospital, Ellis Island, N. Y.

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[4] See also page 37, Ch. II.

Speeding up Discharges and Disposing of Insane and Chronic Patients [5]

Under existing conditions the tendency is to hospitalize some classes of patients in the marine hospitals too long. Many patients could be discharged during early convalescence if they had relatives or homes, but for seamen having no relatives or home it is necessary that convalescence be spent at the marine hospital. Patients should be discharged from the hospital as soon as possible, but not until convalescence is established. To discharge a patient too early would actually render valueless in many instances the treatment already given.

It may be possible in large cities to place some patients in local institutions which have been established for the care of the aged and decrepit. Again, it will be found that some chronic patients are entitled to admission to Sailors' Snug Harbor on Staten Island, and they should be given every aid and encouragement to enter this institution.

Regarding the insane, it should not be lost sight of that a patient, if a citizen of the State, is entitled to treatment in a State institution at State expense. This fact should always be brought to the attention of relatives, and in some instances the relatives will not only consent but will render assistance in committing the patient to a State insane asylum. To commit a patient to a local institution would often mean to have him near by where he could be visited by relatives.

W. H. Slaughter, *Surgeon,*
United States Marine Hospital, Cleveland, Ohio.

The speeding up of discharges and the disposing of insane and chronic patients is a matter not amenable to generalizations of statement. As regards chronic patients requiring domiciliary rather than hospital care, each case is usually a separate problem. To make proper and suitable provision for these patients it is often necessary to ascertain the patient's home conditions, financial resources, social and fraternal affiliations, and religion and legal residence, and with this information as a basis the problem may be worked out, always keeping in mind the availability of Sailors' Snug Harbor on Staten Island as a home for seamen who have had the requisite service. As regards the disposal of insane patients, it is largely a question of legal residence and the willingness of proper authorities to assume jurisdiction.

John W. Trask, *Medical Director,*
United States Marine Hospital, Baltimore, Md.

While the insane in the majority of hospitals may be transferred to the Government hospital for insane at Washington, D. C., this may be impractical at the more remote stations, particularly those on the Pacific coast, in which case contract can be made with State institutions for the care of insane beneficiaries, the patients being committed according to the provisions of the State law.

At a great many hospitals the disposition of certain chronic cases no longer requiring hospitalization, but merely institutional care, constitutes a vexatious problem. This group of cases may include paralytics, tabetics, heart cases, and similar types, who do not require professional care, but who nevertheless are unable to earn their living. For the most part, they are old men who are largely incapacitated by age and physical infirmities. Generally speaking, they have no family that can take care of them and they are without means. Local

[5] See also pages 97 and 98, Ch. III.

institutions are either too congested or otherwise do not regard these cases as legitimate ones for the city and county to support. The result is that they tend to accumulate in the hospital, using bed space that could much better be utilized for the care of the acutely ill. Some of these patients can be transferred to the Seamen's Snug Harbor at Staten Island. Others can be transferred to old soldiers' homes, some of them can be transferred to homes maintained by fraternal organizations or by the church. All of this, however, requires considerable investigation, the securing of data pertaining to the individual patient, correspondence or contact with various institutions, and for this purpose the hospital will require a social worker, either one employed by the Government or an employee of the Seamen's Church Institute.

As most Public Health Service hospitals have a limited capacity, every effort should be made to discharge patients as soon as their convalescence may permit, so that beds may always be available for the acutely ill and those actually requiring bed care.

R. H. Creel, *Medical Director,*
United States Marine Hospital, San Francisco, Calif.

The only way to speed up a discharge is to cure the patient and render him no longer in need of actual hospitalization. The chiefs of service or the clinical director should give close attention to this. No mentally disturbed patient who is likely to injure himself or others, or who is too boisterous, should be kept in the hospital unless there are specially approved facilities for such, but should be transferred immediately to a city institution authorized by law to restrain such cases. The bureau's policy regarding chronic patients *no longer in need of hospitalization* permits us to get such patients in Sailors' Snug Harbor or similar institutions of the city or State. Such cases are really not patients in the meaning of the regulations, as they require only custodial care; but having entered the hospital *in need of treatment*, and when treatment is no longer necessary and they are too old or decrepit to follow their vocation, it becomes necessary for the hospital to try to place them in custodial institutions. Chronic patients *in need of hospital treatment* should be kept in the hospital unless a patient elects and desires to enter some other institution at his legal residence, in which case the marine hospital should assist him to gain admission to such an institution. If such a patient is a bona fide beneficiary, I do not think that he could be denied treatment because he is entitled to enter a city or county institution at his legal residence.

M. J. White, *Medical Director,*
United States Marine Hospital, Stapleton, N. Y.

Expediting the discharge and disposition of the chronic and of the insane is a matter of importance in our hospitals. Much will depend upon the location of the hospital and the number of charitable and benevolent organizations to which one can make application, and, of course, a thorough knowledge of how to reach such organizations and how to go about such a matter.

It is a highly specialized piece of business, and if one has the proper social service organization, it may be safely left as their responsibility.

C. H. Lavinder, *Medical Director,*
United States Marine Hospital, Ellis Island, N. Y.

Necessity of a Surgeon on the Ambulance [6]

We do not regularly send a medical officer out with the ambulance. We have a mimeographed blank upon which data are recorded when the telephone call for ambulance is received. This blank calls for a statement as to the probable illness or injury of the patient, his general condition, and an expression of opinion on the part of the person calling as to whether or not the patient is so ill that a doctor should go out with the ambulance. This information, it has proved, gives us a fairly good idea in deciding whether to send a medical officer. When in doubt we send a medical officer.

We keep on hand in the office a fully equipped medicine bag, which is taken by the officer on ambulance calls.

The blank referred to carries all data necessary for the driver, including the time when the call was received, the time the ambulance left the station, and the time when the patient was picked up. This form is filed in the clinical record.

H. E. Trimble, *Surgeon*,
United States Marine Hospital, Detroit, Mich.

The question whether a medical officer should accompany the ambulance on all calls depends on various circumstances.

It is our practice to have all calls for an ambulance referred to the admitting officer or officer of the day, who asks particularly regarding the nature of the case. In many instances the illness is more or less trivial in character and no medical attention is necessary until arrival at the hospital, while in others a medical officer should be dispatched at once.

Another factor which enters into the question is the distance from which the patient must be brought. Frequently a medical officer will be necessary, because much time must elapse before the patient reaches the hospital.

When there are a number of internes on duty at a station the experience gained by them on ambulance duty may be worth while.

W. S. Bean, *Surgeon*,
United States Marine Hospital, Mobile, Ala.

Regarding the question as to whether a doctor should be sent out on an ambulance call, very often it can be determined beforehand, in answer to a telephone call, etc., by asking a few simple questions regarding the patient's condition.

In many instances the services of a doctor on an ambulance are not required. We can readily see that it is not necessary for a doctor to respond to a call to bring in a case of acute alcoholism; but if definite particulars can not be ascertained regarding the call, I think that a doctor should accompany the ambulance, even though he has nothing more than the ordinary "drunk" to bring to the hospital. If there seems to be a doubt regarding the patient's condition, or if it is thought that the patient's welfare might be jeopardized by not having immediate medical attention, a doctor should accompany the ambulance. Again, the presence of a doctor may avoid criticism of the service should a patient expire while being brought to the hospital; while the doctor in reality may be unable to do anything for the good of the patient, his presence alone would give some consolation to the family and would certainly protect the interests of the hospital.

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[6] See also page 59, Ch. III.

To sum up, I think that a doctor should accompany the ambulance on practically every call, except in those instances in which prior information shows that a doctor's services are not needed.

W. H. Slaughter, *Surgeon*,
United States Marine Hospital, Cleveland, Ohio.

At hospitals having internes responding to ambulance calls may very properly be considered as one of their required duties. The interne before being assigned to ambulance duty should be thoroughly conversant with that part of the regulations appertaining to beneficiaries in order to be in a position to determine whether or not an applicant is entitled to relief, thus avoiding the embarrassment of bringing to the hospital a patient who is not eligible for admission and having to transfer him to a city hospital or other institution.

Since during their course of instructions internes are generally assigned in rotation to duty in the admitting office of the hospital, to the physiotherapy department, and to the X-ray department, to the interne at the time on duty in either of these departments may be given the additional duty of responding to ambulance calls.

Where there are no internes on duty instances occasionally arise when it becomes necessary for one of the ward surgeons to act as ambulance surgeon when the services of a doctor are needed.

A. D. Foster, *Surgeon*,
United States Marine Hospital, Boston, Chelsea, Mass.

A surgeon should be sent on ambulance calls whenever there is the slightest indication that they should be present. When a call comes in for an ambulance the person receiving it should always inquire as to whether or not a physician is necessary and should satisfy himself by appropriate questions regarding the matter. In case there is any doubt, the matter should be decided in favor of the patient.

Should a patient die in the ambulance, considerable difficulty is likely to arise if a physician is not present, since the courts have decided that as soon as a patient is put in the ambulance the hospital assumes responsibility for his welfare.

W. C. Rucker, *Surgeon*,
United States Marine Hospital, New Orleans, La.

In regard to the ambulance surgeons I suppose we have all agreed that it is always safest to have a doctor accompany an ambulance. I regard this as a matter of expediency more than a legitimate necessity. If a man is moribund, it is highly improbable that the immediate medical attention which could be provided en route to hospital would be of any practical advantage, unless, of course, it is a matter of stopping hemorrhage or combating shock. However, on account of our limited medical personnel at this station, a medical officer never accompanies the ambulance, although we generally send along an experienced orderly. I would say that if a physician is available and can be spared without marked detriment to station administration, he should accompany the ambulance on all ambulance calls, where from the information available it seems that the case is a serious one. If conditions at the hospital are such, however, that the sending of a physician would mean neglect of essential station work, then I should think it would be entirely defensible to do as we do and merely send along an orderly. My comment in this respect, briefly stated, is that if a doctor

is available and can be spared send him, if not, do the next best thing and send an orderly who is competent to administer first aid.

Local conditions naturally influence one's opinions. This station can be reached from practically all parts of the water front within one half hour by motor, so that ambulance trips are not prolonged. Moreover, the city maintains emergency hospitals in various sections, and these agencies are generally called on in serious cases, so that we not infrequently get our injury cases from the harbor emergency hospital, located on the water front.

R. H. Creel, *Medical Director,*
United States Marine Hospital, San Francisco, Calif.

In my opinion an ambulance surgeon should accompany all ambulance trips, both when called to get a patient from some outside point, or to transfer patients from one hospital to another hospital. We send chronic patients from this hospital to Ellis Island and invariably send an ambulance surgeon with them. We pay especial attention, I might say, to keeping the ambulance kit fully supplied so that the doctor will always have what he wants in emergency work.

The time that the ambulance call is received, the time the ambulance leaves the hospital, arrives at the patient, leaves, and arrives back at the hospital are all recorded.

I believe that it would be very unwise to send an ambulance out for a patient, or in the transfer of a patient, without a doctor. Such is the practice of this hospital, but there are some marine hospitals that do not do this.

M. J. White, *Medical Director,*
United States Marine Hospital, Stapleton, N. Y.

The Use of Patient Labor [7]

In my experience patient labor can not be counted upon in the management of the hospital. There are always a number of patients who are anxious to assist the nurses in any way possible and these men will often ask for something to do. But aside from assisting in carrying trays, bringing water, etc., to bed cases, sorting linen, and similar work, they can not be counted upon. We insist that all ambulatory patients keep their bedside lockers clean and assist in making their beds.

In my opinion patients can not be expected to do much other than as above. Cleaning toilets and mopping bathroom floors should be done by the orderly.

Many nurses will be able to secure much assistance from patients, but the necessary work in the wards will have to be done by orderlies.

W. S. Bean, *Surgeon,*
United States Marine Hospital, Mobile, Ala.

We do not depend on work by patients. Sometimes lists are posted of those who have shown desire to help. This is to designate rotation and convenient hours. The nurses and not the orderlies control these, with advice and consent of ward medical officers. Our aim is to try not to keep anybody in hospital who is able to work. Those of the boarding-house variety are not encouraged to stay.

O. H. Cox, *Surgeon,*
United States Marine Hospital, Port Townsend, Wash.

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[7] See also page 65, Ch. III.

I have never encountered, from the old-line beneficiaries of the service opposition to reasonable requirements of light duty in wards.

F. H. McKeon, *Surgeon,*
United States Marine Hospital, St. Louis, Mo.

In most of the hospital stations, and especially at those where the force of orderlies and porters is limited, the services of convalescent patients can be used to advantage in the care of wards and in the performance of other station work. The regulations permit the assignment of patients to perform light duties in and about wards to such an extent as may not be detrimental to their recovery. Naturally, the tasks assigned to such patients should be only such as their physical strength will permit them to perform. These duties may include the sweeping or scrubbing of floors in the wards, rolling bandages, cutting gauze, washing glassware, carrying empty trays, and, outside, it may even include the cutting of grass and raking of lawns. These tasks should be allotted to convalescent patients impartially, and care should be exercised so as not to discriminate against any one patient merely because he is a willing worker. To such an extent as their strength and health may permit, the assisting in ward work may be regarded as a legitimate duty of recovering patients and this particularly applies to those whose convalescence ordinarily would be spent at home rather than in the hospital, and who are being retained in the hospital merely because they have no home or may not have means of supporting themselves, pending full recovery of strength. Due consideration should be exercised in assigning this class of patients to ward work. The master of a vessel might well assist in making bandages and cutting gauze, but would very properly regard it as beneath his dignity to scrub floors. The performance of light work is ofttimes beneficial to patients both in a physical and mental way, as it affords the necessary exercise and mental diversion, and, providing selections have been made with due consideration, patients should be required to perform these tasks as an obligation and not merely as an accommodation, although, of course, it is much better that the services of such patients be obtained in a tactful way, so that they serve willingly and more competently.

R. H. Creel, *Medical Director,*
United States Marine Hospital, San Francisco, Calif.

Patient labor, unless handled very carefully, is likely to be very expensive. If a man is a good worker, there is always a temptation for the officer in charge of the ward to extend his period of hospitalization beyond that which is actually necessary. Patients should never be employed in positions of responsibility or danger. All patient labor should be voluntary; that is, it should be suggested to them that if they desire to perform certain duties they will be permitted to do so. If they do not wish to do the work, they should not be forced to do so nor should they be discharged from the hospital for refusing to work. It is sometimes very difficult to get nurses to take this point of view, and they should under no circumstance be allowed to order patients to perform labor. A really capable nurse can get patients to work their heads off for her.

In this connection there is one point which I trust you will stress and that is the employment of persons from the wards. By this I mean taking them on the permanent staff of the hospital. In my opinion, this is a very great administrative error, and I make it a rule to employ no one, no matter how competent he may be, from the wards.

This calls to my mind another point, and that is the very careful physical examination of all personnel before employment. I have found that the employment of any person who is not in the best of physical condition has proved most expensive and annoying.

Patients won't do outside work. When I was erecting the recreation hut some of them did volunteer for the laying of brick piers and the painting of the exterior but this is the only time I have ever known patients to be willing to do work outside their own particular wards.

W. C. Rucker, *Surgeon,*
United States Marine Hospital, New Orleans, La.

Disposal of Trash and Garbage [8]

The method of collection and disposal of garbage and station waste will vary in different localities. In some communities garbage is collected by city employees, and in others the collection is done by private agencies, the cost being levied on the householder or institution. At several stations, however, the garbage is sold as food for hogs, the contractor not only hauling away the garbage but paying for the privilege, so that in this manner the disposition of garbage at some hospitals is a matter of profit. While the separation of garbage from station waste is necessary generally, it is particularly imperative when the garbage is being sold for hog food, and appropriate measures should be made to see that ward waste and station refuse in general is not mixed in with garbage. The collection and temporary storage of garbage on the station should be accomplished in such a manner as to minimize such nuisances as breeding or attraction of flies or the creation of objectionable odors, and these factors are especially important in a warm climate. Garbage will accumulate chiefly in the main kitchen, but to some extent also in the ward kitchens and dining rooms. Station garbage should be stored, pending its collection, in a fly-proof room—one so constructed that it can be easily washed and hosed down. It should have tile or concrete floors, with central drain and impervious wainscoting, say, 3 or 4 feet high, and preferably should adjoin the central kitchen.

Ordinarily the mixture of ward refuse, such as discarded bandages, cotton and dressings in general, and garbage in the ward kitchen or dining room, seldom occurs; but precautionary measures should always be taken to prevent it. The general waste from the station is either hauled away by a municipal collection system or private contractor, or otherwise it may be burned on the station in an incinerator or on a dump. In event of the latter, every care should be taken as to location of the dump and its management, so that no objectionable odors or smoke shall disturb the inmates of the hospital. If a dump is maintained on the station for purpose of burning refuse, it should be located in an inconspicuous part of the reservation and where the prevailing winds will blow from the hospital rather than toward it. Only easily combustible material should be disposed of at the dump.

R. H. Creel, *Medical Director,*
United States Marine Hospital, San Francisco, Calif.

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[8] See also page 90, Ch. III.

Best Methods to Secure Autopsies [9]

One of the first essentials in securing autopsies is to have a medical staff that is keenly interested in gaining all the information possible concerning its patients. Another essential is a proper morgue where bodies can be kept in good condition pending authority for the autopsy and where the examination can be properly and comfortably made.

In the event of patients' dying without near relatives or other person responsible for them, autopsy should be ordered immediately by the medical officer in charge.

When there are relatives, their permission of course must be secured. If the responsible person is located at a distance the telegram notifying them of the death should request permission for a medical examination of the body without disfigurement. Where the near relative is present at the time of death, his consent should be secured in writing. This consent can in many instances be more readily obtained by the medical officer who had immediate charge of the case, as he has probably had more contact with the relatives prior to the death. Frequently, on stressing the necessity of an accurate death certificate, the relatives' permission may be obtained.

In some instances permission can not be secured for a complete autopsy, but relatives will consent to a partial examination, and this should be attempted at any rate.

Frequently the assistance of the undertaker will secure the necessary permission. Therefore every effort should be made to secure the cooperation of the undertaker. If the undertaker and the pathologist have an understanding regarding the technique of the autopsy, particularly as regards the ligation of large vessels and the disposition of viscera, the former's help can be relied upon in most instances.

Autopsies should be performed by the pathologist with the assistance of the ward surgeon having immediate charge of the case. All autopsies should be carefully performed and every effort made to disfigure the body as little as is possible.

W. S. Bean, *Surgeon*,
United States Marine Hospital, Mobile, Ala.

In order to secure permission to perform an autopsy, it is usually essential to convince the person granting permission that it is to his direct personal advantage to have a post-mortem examination performed. The relatives of our patients are not interested in scientific medicine, nor are they greatly concerned about the welfare of the human race. They are, however, interested in prolonging their own lives and in keeping free from disease. A little time spent in explaining the tendency of certain diseases to run in families and the importance to the living to know the diseases and defects of their dead relatives will usually secure the necessary consent.

If the patient was insured, a judicious reference to the value of post-mortem examinations in expediting the payment of life-insurance policies will be useful.

In asking permission to perform an autopsy, a medical officer *must avoid* giving the impression that he is asking a favor for himself or the hospital. He must *offer* to perform the autopsy as a favor to the relatives of the deceased and should be astonished if the relatives do not so consider his offer. He should show the relatives that it is to their advantage to know what can be learned from a thorough examination of the body. Having secured permission, the medical staff should keep faith with the relatives by performing a complete and

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[9] See also page 95, Ch. III.

thorough autopsy and taking pains to leave the body in the best possible condition for embalming.

It is important to secure permission for an autopsy as soon as possible after death, before the undertaker has been employed and possibly advised the relatives against it.

When a ward surgeon has reason to believe that one of his patients is about to die, he should arrange to meet the relatives as soon as they appear at the hospital. He should advise them of the serious nature of the illness and by establishing contact prepare the way for the permission autopsy later. In certain cases it might be adivsable and proper to secure permission for the autopsy before the patient actually expires.

In my experience the above method, if zealously carried out, is usually successful.

J. H. Linson, *Surgeon*,
United States Marine Hospital, Chicago, Ill.

Economies in Hospital Management [10]

This station, being a large one and having so many diversified interests, is necessarily quite different from other stations of the service. As you know, it has its own range and dairy herd; does it own butchering; has its own electric-light plant, ice plant, farm, and range. The reservation comprises some 27,000 acres. Obviously there is need of close supervision in order to prevent unnecessary expenditures.

As regards the hospital proper, the cost of operating is largely influenced by the amount of stores (expendable property) used, together with the pay and maintenance of the personnel, and strict supervision of the above, with personnel reduced to a minimum consistent with efficiency, is, of course, imperative.

We find that it is necessary to limit all drugs used by prescription or otherwise from the dispensary, and that these articles should be put up in small amounts. Special precaution must be taken in requisitioning drugs—only a minimum amount should be ordered.

Furniture polish, metal polish, and certain other standard articles in use should be compounded in the dispensary as occasion requires, using standard formulas. These articles can be produced in this way at much less expense.

It has been suggested to me that the routine use of disinfectants, such as chloride of lime, cresol solution, etc., can be limited. The routine use of disinfectants for cleansing purposes should be prohibited or at least limited.

Blankets are washed too frequently. In general, it is not necessary to launder blankets oftener than once in six months. They should, however, be aired in the sun frequently. One of the reasons for the turnover of blankets at this station has been due to too many washings. The advisability of not washing blankets at all might be considered; they could be dry-cleaned twice a year.

The laundry of personnel contributes largely to our station cost. We can hardly avoid this here, but it is believed, except in such isolated stations, that it would be in the interest of economy to give employees their laundry allowance with the view of having this work done outside. This would make a reduction of the personnel in the laundry possible and would reduce the cost of supplies.

All personnel should be reduced to a minimum consistent with efficiency.

J. W. Tappan, *Surgeon*,
United States Marine Hospital, Fort Stanton, N. Mex.

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[10] See also p. 115, Ch. III.

I believe that one should strive to obtain and deliver service of quality. Articles of quality and service of quality are in the end cheapest. Food and hospital equipment should be the best obtainable under existing circumstances. Cheap food resulting in excessive waste is expensive. Cheap equipment is likewise expensive.

The staff should be adequate, but not excessive, for the work to be performed. The hospital should be kept full of active cases. Unnecessary hospitalization must not be permitted, and prolongation of hospital stay of in-patients must likewise not be permitted. Surveys of in-patients from time to time will bring attention to therapeutic measures of benefit and hasten cure or determine that maximum benefit from hospitalization has already been reached.

Good service, good food, and good equipment is a triad on which economical administration may be safely built.

Reclaiming gauze, saving small pieces of soap, and such like activities are desirable in some instances, but must not become the spectacular froth on the sea below, and one must not let his zeal for saving pennies interfere with the main job of curing the patient.

S. L. Christian, *Surgeon*,
United States Marine Hospital, Norfolk, Va.

Among the more important methods of bringing about economies of hospital administration are the following: Elimination of other than competent hospital employees, study of the proper methods in the purchase of food and other supplies, care in the preparation of food and proper use of left-over food, elimination of waste, as in the case of hospital supplies of all sorts, electricity, water, and gas, and proper methods of laundering.

Care in the use of hospital supplies should be insisted upon, and frequent conferences should be held between the medical officer in charge and the heads of the various hospital departments as to methods to pursue to reduce waste in the use of such hospital supplies. Breakage is a source of much expense, and often ways can be found to reduce it to a minimum and below present limits. Constant care is necessary to reduce waste in the use of water, gas, and electricity. In connection with the surgical department of a hospital a considerable reduction in expenses can often be brought about by constant carefulness in the use of supplies such as surgical dressings and in the reclaiming of certain supplies, particularly gauze.

The laundering of hospital supplies should receive very careful consideration, as improper methods of laundering are often a source of much unnecessary expense.

G. Parcher, *Surgeon*,
United States Marine Hospital, Portland, Me.

Economic management is intimately involved with efficiency and probably is inseparable therefrom. Certainly, economy without efficiency is a miscarriage of purpose. It is usually a fact, however, that a reduction in cost is a concomitant of efficiency in service. Supplying a hospital with all the equipment which will save labor or time or which will make it possible to diagnose more readily or more accurately morbid conditions, or which will make it possible to give better treatment to the patients, results in a lessened expense. Labor-saving devices make necessary a smaller personnel. Facilities for diagnosis or treatment shorten the time that patients must be kept under treatment. Probably one of the factors which is most closely involved with efficiency and economy is the question of personnel. There is nothing more destructive of efficiency and the

accomplishment of work than having six people to do the work of five, unless it is having seven people do it. The work of the personnel should be nicely adjusted. The personnel should be just enough to accomplish the work with steady and reasonable application during the working hours. The personnel should not be so few that it is impossible for them to do their work properly even with interest and application. But worse than having too few personnel is having too many. Work which would properly be a task for five persons and would be well done by five persons will be less well done by six or seven. The nice adjustment of work is complicated in some measure by vacations or annual leave. If the personnel is adjusted to the task, then there are too few to perform the work during those parts of the year when members are on leave. If the personnel is adjusted to do the work during times of leave, then when none are on leave the staff is too numerous. This especially applies to the smaller departments or activities of a hospital. With the nursing service or any department which has a sufficiently numerous personnel this difficulty need not exist, as the leaves can be evenly distributed throughout the year and the number of workers adjusted to that basis; that is, if a department requires a staff of 11, it can be given a staff of 12 and 1 put on leave each month of the year, leaving 11 at all times to do the work. One important means of securing lowered expense is the employment of intelligent, competent personnel even when increased compensation is necessary to secure such services. The output of a competent personnel is greater and the unit work cost is less.

JOHN W. TRASK, *Medical Director,*
United States Marine Hospital, Baltimore, Md

The text of a treatise on possible and practicable economics in hospital management could not be condensed very well in a half page of printed matter, and so I shall merely mention a few items:

Fuel.—Use pea and buckwheat coal instead of the more expensive kinds. Fuel oil might be cheaper in some localities. Sell ashes to contractors.

Subsistence.—Buy the best goods from the best dealers. This does not mean the "super best." Sell garbage, grease, bones, scraps, potato sacks, vinegar barrels, bottles, egg crates, etc., where practicable or arrange at the time of purchase for rebate on such articles. While such containers are Government property, having been bought, they are not classed as either expendable or nonexpendable property and hospitals are at liberty to throw them out. They are, however, salable, and, like garbage, could be sold and the money deposited with the Treasury of the United States.

Laundry.—Don't buy cheap hospital linen, pajamas, bath towels, etc.; use the soaps and methods employed by the local laundries. Repair torn linen promptly; "A stitch in time saves nine" is particularly applicable to hospital linen.

Motor vehicles.—Keep tightened up, well painted, and in shipshape condition at all times. Inculcate in drivers that they are personally responsible for damage to motor vehicles.

Buildings and grounds.—Maintain in first-class condition at all times. Never let them run down. It is cheaper to keep a fat man fat and sleek than to fatten a thin man. Fertilizer should be used systematically on the lawns, flower beds, and trees, and they should not be allowed to starve; the treatment for starvation is an expensive matter. Particular attention should be given to storm-water drainage to prevent damage to the foundations of buildings and undue erosion of roadways and grounds. Unless the roofs and outsides of the buildings are kept painted and repaired, considerable damage is likely to result to plaster work, etc.

It is more economical to maintain a building in good condition by prompt attention than to let it go for several years, when a much larger expenditure would be required. After property has been issued to the various departments, the matériel officer should still follow it up and study the cause of loss breakage, and damage, so that corrective measures may be put into effect. When the matériel officer swears off property and any undue breakage or loss appears special study should be made as to the cause for the use of prevention.

M. J. White, *Medical Director,*
United States Marine Hospital, Stapleton, N. Y.

I have found from experience that if a medical officer in charge, without issuing orders, but by seeking cooperation, keeps careful supervision over expendable articles, considerable reduction in expense may be achieved without friction. For example, in the matter of cleaning materials, such as soap, soap powder, mops, etc., if careful record is kept of the quantities used in the various parts of the hospital, there is in time established a sort of standard which judgment proves as being about right; then when a wasteful attendant or employee begins to use too much of such materials one may with justice criticize him.

I have found that considerable money may be saved by keeping careful records of expendable articles, seeking the cooperation of employees using the same and instituting reasonable economies. On the whole I feel, however, that any economy worth while must be largely made in the matter of personnel and food. Of course none of our hospitals are over-staffed, and reductions in personnel are matters of serious consideration.

I believe, however, a well-organized dietetic department, in the charge of a good chief dietitian, will often result in the saving of a great deal of money without in any way interfering with the quantity and quality of the food supplied. We should recall that in a large hospital the reduction in the ration cost of only 1 or 2 cents means a considerable saving of money.

C. H. Lavinder, *Medical Director,*
United States Marine Hospital, Ellis Island, N. Y.

The Preparation of Special Diets (How and Where Done)[11]

The preparation of special diets in a large hospital does not constitute a serious problem. Where more than one dietitian is on duty, one of them should be regularly assigned to the preparation of the special diets. With the assistance of one cook regularly assigned the work can be easily accomplished.

In the smaller hospitals where there is either one dietitian on duty or the chief nurse is acting dietitian the question of special diets constitutes more of a problem. We have detailed one nurse to assist with the diets and she, with the housekeeper, attends to the specials. We have no trained dietitian, and so it is necessary for the medical officer in charge of the individual case to prescribe his diet in some detail, leaving only the matter of amounts to the nurse on duty in the diet kitchen.

The diet kitchen should be located as near the wards as possible in order to facilitate the handling of the trays. The greatest problem is getting the food to the patient while it is hot, and a location near the wards is a great advantage in doing this.

W. S. Bean, *Surgeon,*
United States Marine Hospital, Mobile, Ala.

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[11] See also page 134, Ch. IV.

Marine hospitals are unlike civil hospitals and operate under different conditions, and for this reason methods obtaining in the latter are not applicable in the former. The frequency with which we are called upon to treat metabolic diseases is less than is the case in civil hospitals. Conditions of this kind which we meet with most frequently are hypertension, acute and chronic nephritis, and diabetes.

On account of the need for the exercise of economy in the matter of kitchen personnel and space for the preparation of food, it has been found advantageous to have practically all special diets prepared in connection with the preparation of food in the main kitchen of the hospital.

A table equipped with a suitable pair of scales for weighing portions of food, and graduates for measuring liquids, can be set aside for this purpose. The actual preparation should be under the supervision of the dietitian with the aid of an assistant cook. With the help of tables showing the relative food values, a cook of ordinary intelligence can be taught to carry on this work in an acceptable manner during the absence of the dietitian on leave.

In the case of diabetic diets, it is advantageous for the ward surgeon to prescribe the number of grams of carbohydrates, proteins, and fats, as needed in each individual case, and from this prescription the dietitian prepares the proper diet from various vegetables, etc., as may be obtained in the market, according to season.

Since it is an accepted rule that commissioned officers of the Government requiring hospitalization should be assigned to a private room, whenever possible, the question of separate dining facilities for this class of cases is easily solved by serving their meals on a tray in their rooms.

At stations where commissioned officers of the United States Coast Guard, United States Coast and Geodetic Survey, or other establishments of the Government are frequently in need of hospitalization, and a sufficient number of private rooms are not available to accommodate them, it is expedient to set aside a small ward containing four or six beds reserved for this purpose. When possible, a separate toilet should be set aside for their use, or when this is not possible a locked compartment in the general toilet room.

In establishing separate tables for different classes of beneficiaries other than the above, we are likely to run into serious difficulties. It is well not to attempt it. The better plan is to let it be known that we are anxious to provide the best in the way of medical attention, food, etc., and are glad to do this for those willing to avail themselves of the facilities provided.

A. D. Foster, *Surgeon,*
United States Marine Hospital, Boston, Chelsea, Mass.

Possible and Practicable Economies in Ration Cost [12]

Ration cost begins from the drawing up of contracts for the purchase of food supplies and terminates when these supplies are consumed or disposed of as waste. In assuming charge of a station it is well to examine all contracts that have been let out for a year previously and make a survey of local markets which will show what can be purchased and current prices. At times it may be a means to discover unfairness on the part of contractors. As an illustration, a large number of articles are placed on a proposal and the bidder bids high on such articles that are consumed in large quantities but low on those articles that can not be used a good deal or are entirely unobtainable at a given season of the year except for part of the period specified in the contract. The lowest bidder will

[12] See also page 135, Ch. IV.

obtain the contract but will keep out an honest dealer and the Government will be obliged to pay a higher rate than necessary. Such a condition can be immediately remedied. The cure is simple and consists in splitting up the articles by placing them on separate proposals so as to secure a better balance of prices, leaving little chance to be deceived by the sum total of any bid received.

It is poor economy to purchase articles other than the best that the market offers, but this should not be construed as considering it desirable to purchase fancy articles which, on the other hand, constitute an item of waste. It is by far better to purchase 1 dozen eggs at a relatively high price and to be able to use all of them than it is to purchase a dozen eggs at a low price and to be able to use only part of them. It is not at all necessary to purchase eggs that are sold in fancy packages. Larger packages of food products are more economical than smaller ones, but care should be exercised that no subsequent waste occurs.

All prepared food should be eaten at the intended time.

M. S. Lombard, *Surgeon,*
United States Marine Hospital, Key West, Fla.

Our grocery contracts at Louisville, Ky., are split up between the two lowest contractors. The lowest items of each contractor are used.

All canned goods, whenever possible, are purchased in No. 10 sizes or larger.

All supplies are weighed or counted as soon as received and notations made of shortages, for which credit is immediately claimed.

All food is sent up to the dining room. It is served cafeteria style to the ambulatory patients. Only as much food is placed on plates as will be eaten. The patients are informed that they may have as many helpings as they desire. The result has been that the edible wastage has been cut to a minimum, less food is being served, and everybody appears to be satisfied. For bed or tray patients the food is served the same as to the ambulatory patients. The trays are examined when they come back, and if for any reason the left-over food on the tray is greater than it should be, the next serving to this patient is made smaller. These patients are likewise advised that they may have more helpings if they so desire.

All food not consumed is used at the next meal or the next day in one form or another.

Menus are prepared one week in advance, and we attempt to obtain fruits and vegetables that are in season. We do not have the same menu for each week.

Joseph Bolten, *Surgeon,*
United States Marine Hospital, Louisville, Ky.

Cafeteria Service: Advantages and Disadvantages for Various Classes of Patients in Marine Hospitals of Various Sizes [13]

I believe that cafeteria service for ambulatory patients is as economical and more satisfactory for our type of patients than table waiter service.

I am not, however, in favor of cafeteria system for professional people, including nurses and aides. For them dining is a mild social function. The waiter service cultivates and maintains better manners, and these extend somewhat beyond the limits of the dining room. I believe that professional personnel maintain a better professional and social dignity solely because of this manner of dining; it puts them more on their good behavior.

Floyd C. Turner, *Surgeon,*
United States Marine Hospital, Buffalo, N. Y.

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[13] See also p. 150, Ch. IV.

The following discussion as to the advantage of a cafeteria service for marine hospitals is based on the supposition that aluminum trays will be used and that the installation itself is attractive in appearance and operation.

Condition of food when it reaches patient.—With the usual dining-room service the food is carried from the kitchen to the dining room and can be kept warm until served. It is then transferred to platters, which are distributed to the various tables. There is always a certain lapse of time from the distribution of some platters on the tables before the patients are admitted to the dining room. This means that the food in many instances will not be hot when the patient actually places it on his plate. With the cafeteria system the food is carried from the kitchen direct to the steam table where it is placed on the patient's plate while still hot. It is well-nigh impossible to prevent "hogging" by some patients when platters are placed on the tables; and while sufficient supervision could prevent this, the amount necessary would certainly add to the cost of the service. On the other hand, the cafeteria guarantees a more even distribution at the first service.

Economy.—It is not believed that the number of employees will be markedly reduced by this method. It is believed, however, that the same number of employees can give better service. The patient carries his food from the cafeteria to the table on his tray. His dishes remain on the tray while he is eating, which prevents to a great extent the messing up of the table. On finishing his meal, the patient carries his tray to the dishwashing room, if this is convenient, or otherwise places it on a tray rack, which can be wheeled to the dishwashing room. This centralizes the garbage at one point. It results in economy in dishes as platters are not used, but makes necessary the use of trays. It is believed that it saves some food, as the ordinary mess attendant in marine hospitals will invariably throw small amounts of food left in platters into the garbage can rather than take the trouble of collecting it for return to the kitchen. Finally, it results in economy in space and time of service. The same number of chairs will serve many more patients in the same length of time, as those coming promptly will finish soon enough for later ones to have their places. This saves space and does away with the second setting up of tables where two feedings are required because of lack of space. Perhaps the greatest objection to this system of feeding is the dislike of certain individuals for such service. However, in marine hospitals this is not of a great deal of importance, because of the rapid turnover in patients. It is not believed that such service should be provided for tuberculosis wards, as here the psychic attitude of the patients and their prolonged hospitalization are of such extreme importance in their treatment.

T. B. H. Anderson, *Surgeon,*
United States Marine Hospital, Pittsburgh, Pa.

The feeding of ambulatory patients may best be handled by distributing meals by cafeteria style. Table portions may be equally as economical, but greater waste may occur through accidents, lack of foresight, or unwillingness on the part of the waiters. In handling diets by the cafeteria style it is often possible to make further use of any food prepared but not consumed.

M. S. Lombard, *Surgeon,*
United States Marine Hospital, Key West, Fla.

At a big station like this it is not practicable to have the officer of the day be present to observe the service in the dining room. For this purpose I have another officer who is virtually an assistant to the officer of the day. He is called

the duty officer. He inspects all meals excepting breakfast, which is inspected by the officer of the day. I think that food should not be laid out on platters beforehand, as it is likely to get cold and dry out. The duty officer, among other things, is required to inspect the trays as they go back to the dishwasher and to report on undue wastage. In this way it is possible to find out what men will and will not eat. For example, it was found that patients would not eat chipped beef and canned asparagus; that they will eat cooked fruit for supper, but will not eat it for breakfast.

It has been my observation that cafeteria service is economical in both labor and food. There should be self-service for bread, water, and dessert. The patient should be served as he passes along the line with vegetables, meats, fish, tea, coffee, and milk. Services should be moderate and second services should be permitted. Patients should be required to carry their tray with the dirty dishes to a 3-deck table situated close to a dishwashing room. Patients should be encouraged to eat from their trays instead of taking their food off the tray and placing it on the table top. This reduces the cleaning of table tops and floors to the minimum.

I have found no objection by patients to cafeteria service.

W. C. Rucker, *Surgeon*,
United States Marine Hospital, New Orleans, La.

Special Tables and Private Rooms for Licensed Men [14]

At Fort Stanton we have separate tables for licensed men. In the ambulatory section licensed men also have quarters to themselves, but we are unable to furnish separate quarters in the infirmary. We do not discriminate in the case of other patients such as Employees' Compensation Commission beneficiaries, etc. Commissioned officers of the United States Coast Guard have separate quarters; they are usually quartered in the officers' mess.

J. W. Tappan, *Surgeon*,
United States Marine Hospital, Fort Stanton, N. Mex.

Ship's officers live and eat apart from the crews of their vessels. In all probability a crew would resent the encroachment of the officers in their quarters or mess as much as would the officers resent similar encroachment on the part of the crew. Each has a right to his own living environment and is happier thereby and the ship is the better for it. When officers and members of a crew come to the hospital it is only with personal mutual embarrassment that they can be housed together in the same wards or eat at the same mess. All are happier if the separation which is maintained on ship continues in hospital. Their return to duty and the resumption of shipboard status is made easier. Many ship's officers for these and other reasons will not go to a hospital except where they can have individual rooms.

John W. Trask, *Medical Director*,
United States Marine Hospital, Baltimore, Md.

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[14] See also page 151, Ch. IV.

APPENDIX

(TECHNICAL DATA, FORMULAS, MENUS, RECIPES, ETC.)

OUTLINE FOR MAKING AUTOPSIES

The following instructions[1] concerning the making of autopsies are in force at U. S. Marine Hospital, New Orleans, La., and are an excellent guide for all stations:

I. Hospital Record of Deceased:

Name, register number, sex, age.
Race, nationality, occupation.
Date admitted to hospital, clinical diagnosis.
Date, hour, and cause of death.
Authority for performance of autopsy (to be attached to chart).
Date and hour of commencement of autopsy.
Names of medical officers performing autopsy.

II. External Examination:

Include the following observations in suitable form—
Condition of nutrition and development, sex, apparent age, and weight.
Actual height.
Odor.
Type of chest and abdomen.
Rigor mortis and liver mortis.
Deformities and anomalies.
Glandular condition.
Edema.
Hair (color, quantity, and distribution).
Appearance of skin, eruptions, scars, wounds, bruises, and identification marks.
Orifices (mouth, nose, ears, genitals, anus).
Condition of teeth and tongue.
Exposed mucous membranes.
Eyes (eyelids, color, and corneæ).
Condition of joints.

III. Internal Examination:

General procedures to be recorded—

1. Incisions made to open or dissect the cadaver.
2. Presence or absence of fluids in cavities, amount and description.
3. Topographical exploration of organs *in situ*.
4. Method, extent, and sequence of examination.
5. Measurements and weights ONLY of all organs examined and found to be normal.
6. Mensuration and detailed description of every gross morbid feature.

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[1] Furnished by Surg. W. C. Rucker, U. S. Marine Hospital, New Orleans, La.

III. Internal Examination—Continued.

7. Statement of ascertainment before closure of body that cut ends of arterial supply to head and extremities were securely ligated.

IV. Specimens Preserved:

1. For laboratory diagnosis.
2. For museum.

V. Summary:

1. Pathological findings.
2. Pathological diagnoses.
3. Cause of death.

Minutes of proceedings should be recorded during performance of autopsy. Recorder should then number and write protocol in autopsy record book and sign it. After reading the protocol before the first staff meeting, where amendations or corrections are to be made, a typewritten copy is to be prepared on Form 1946–N for file on chart. Microscopical and bacteriological findings subsequently reported are to be forwarded to the registrar's office for file on chart.

DAILY MENUS

A sample menu for one week of each month of the year and a few other menus which have been selected are presented in the following:

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
NEW YEAR'S DAY, JANUARY 1, 1928		
Oranges. Bran flakes. Omelet. Toast—butter. Coffee—milk.	Barley broth. Celery. Cranberry jelly. Roast turkey—dressing. Mashed potatoes—gravy. Buttered peas. Chocolate ice cream. Bread—butter. Tea—milk.	Escalloped oysters. Candied sweetpotatoes. Lettuce salad. French dressing. French rolls—butter. Sliced pineapple. Tea—milk.
MONDAY, JANUARY 2, 1928		
Stewed prunes. Pettijohn's. Bacon. Bran muffins—butter. Coffee—milk.	Vegetable soup. Roast beef. Browned potatoes. Stewed tomatoes. Rice pudding. Bread—butter. Tea—milk.	Frankfurters. Escalloped potatoes. Raspberries. Cake. Rolls—butter. Tea—milk.
TUESDAY, JANUARY 3, 1928		
Apples. Farina. Soft cooked eggs. Bread—butter. Coffee—milk.	Cream of asparagus soup. Beef stew with vegetables. Boiled potatoes. Loganberry pie. Bread—butter. Tea—milk.	Pork chops. Baked potatoes. Cabbage salad. Rolls—butter. Peaches. Tea—milk.
WEDNESDAY, JANUARY 4, 1928		
Stewed figs. Oatmeal. Bacon. Hot biscuits—butter. Coffee—milk.	Noodle soup. Veal cutlets. Mashed potatoes. Creamed onions. Fruit jello. Bread—butter. Tea—milk.	Hash. Baked Lima beans. Combination salad. Cookies—pears. Rolls—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
THURSDAY, JANUARY 5, 1928		
Bananas. Pettijohn's. Sausage. Corn muffins—butter. Coffee—milk.	Clear soup. Pot roast—gravy. Mashed potatoes. String beans. Peach tapioca. Bread—butter. Tea—milk.	Steak. French fried potatoes. Fruit salad. Rolls—butter. Tea—milk.
FRIDAY, JANUARY 6, 1928		
Apples. Oatmeal. Soft cooked eggs. Hot biscuits—butter. Coffee—milk.	Cream of tomato soup. Sautéed halibut. Tartar sauce. Stewed tomatoes. Parsley potatoes. Pumpkin pie—cheese. Bread—butter. Tea—milk.	Cold cuts. Potatoes au gratin. Corn oysters. Plums. Rolls—butter. Tea—milk.
SATURDAY, JANUARY 7, 1928		
Oranges. Pettijohn's. Bacon. Corn bread—butter. Coffee—milk.	Vegetable soup. Corned beef. Boiled potatoes. Cabbage. Bread pudding. Bread—butter. Tea—milk.	Oyster stew. Baked potatoes. Celery. Sliced cheese. Royal Anne cherries. Rolls—butter. Tea—milk.

Chief Dietitian A. L. S.

MENUS—JANUARY 1, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Oranges. Bran flakes. Omelet. Toast—butter. Coffee—milk.	Barley broth. Celery—radishes. Cranberry jelly. Roast turkey—dressing. Mashed potatoes—gravy. Buttered peas. Chocolate ice cream. Bread—butter. Tea—milk.	Escalloped oysters. Candied sweetpotatoes. Lettuce salad. French dressing. French rolls—butter. Sliced pineapple. Tea—milk.
T. B.'S		
Oranges. Bran flakes. Omelet. Toast—butter. Coffee—milk.	Barley broth. Celery—radishes. Cranberry jelly. Mashed potatoes—gravy. Roast turkey—dressing. Chocolate ice cream. Buttered peas. Bread—butter—coffee.	Soup. Escalloped oysters. Candied sweetpotatoes. Lettuce salad. French dressing. French rolls—butter. Sliced pineapple. Tea—milk.
SOFTS		
Oranges. Farina. Omelet. Toast—butter. Coffee—milk.	Barley broth. Cranberry jelly. Minced turkey. Mashed potatoes—gravy. Chocolate ice cream. Toast—butter—coffee.	Soup. Escalloped oysters. Baked potatoes. Jello. Toast—butter. Tea—milk.

MENUS—JANUARY 1, 1928, UNITED STATES MARINE HOSPITAL NO. 5—Continued

Breakfast	Dinner	Supper
VEGETABLES AND NEPHRITICS		
Oranges. Bran flakes. Omelet. Toast—butter. Coffee—milk.	Barley broth. Celery. Cranberry jelly. Roast turkey—dressing. Mashed potatoes—gravy. Buttered peas. Chocolate ice cream. Bread—butter—coffee.	Soup. Escalloped oysters. Candied sweetpotatoes. Lettuce salad. French dressing. French rolls—butter. Sliced pineapple. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Str. barley broth. Chocolate ice cream. Tea—milk.	Soup. Jello. Tea—milk.

Chief Dietitian, A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, FEBRUARY 1, 1928		
Grapefruit. Shredded wheat. Broiled bacon. Toast—butter. Coffee—milk.	Tomato soup. Celery. Chicken fricassee. Dumplings. Buttered cauliflower. Caramel ice cream. Bread—butter. Tea—milk.	Cold meats. Baked sweetpotatoes. Lettuce salad. Raspberries. Bread—butter. Tea—milk.
MONDAY, FEBRUARY 2, 1928		
Stewed figs. Cream of wheat. Soft cooked eggs. Muffins—butter. Coffee—milk.	Vegetable soup. Roast veal—gravy. Browned potatoes. Parsnips. Fruit jello. Bread—butter. Tea—milk.	Italienne spaghetti. Sliced cheese. Vegetable salad. Cake—pears. Rolls—butter. Tea—milk.
TUESDAY, FEBRUARY 3, 1928		
Bananas. Oatmeal. Hot cakes—syrup. Sausage. Bread—butter. Coffee—milk.	Noodle soup. Stuffed veal hearts. Pickles. Mashed potatoes. Apple pie—cheese. Bread—butter. Tea—milk.	Steak. French fried potatoes. Combination salad. Sliced peaches. Rolls—butter. Tea—milk.
WEDNESDAY, FEBRUARY 4, 1928		
Apples. Cornmeal mush. Scrambled eggs. Bread—butter. Coffee—milk.	Barley soup. Roast pork—gravy. Browned potatoes. Spinach. Pineapple tapioca. Bread—butter. Tea—milk.	Hash. Red kidney beans. Lettuce with Thousand Island dressing. Plums—cake. Rolls—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
THURSDAY, FEBRUARY 5, 1928		
Stewed prunes. Pettijohn's. Sausage. Whole wheat muffins—butter. Coffee—milk.	Lima bean purée. Beef stew with vegetables. Baked potatoes. Baked apples. Bread—butter. Tea—milk.	Veal cutlets. Hashed browned potatoes. Cabbage salad. Rolls—butter. Sliced pineapple. Tea—milk.
FRIDAY, FEBRUARY 6, 1928		
Stewed peaches. Oatmeal. Hot biscuits—butter. Fried eggs. Coffee—milk.	Cream of tomato soup. Sautéed white fish. Parsley potatoes. Stewed corn. Pumpkin pie. Bread—butter. Tea—milk.	Baked beans. Sliced cheese. Boston brown bread. Fruit salad. Bread—butter. Tea—milk.
SATURDAY, FEBRUARY 7, 1928		
Oranges. Cream of wheat. Fried cornmeal mush—sirup. Bacon. Bread—butter. Coffee—milk.	Vermicelli soup. Spareribs. Steamed potatoes. Caramel pudding. Bread—butter. Tea—milk.	Liver and onions. Baked potatoes. Beet pickles. Rolls—butter. Apricots. Tea—milk.

Chief Dietitian, A. L. S.

MENU—FEBRUARY 2, 1928, UNITED STATES MARINE HOSPITAL NO 5.

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Stewed figs. Cream of wheat. Soft-cooked eggs. Muffins—butter. Coffee—milk.	Vegetable soup. Roast veal—gravy. Browned potatoes. Parsnips. Fruit jello. Bread—butter. Tea—milk.	Italienne spaghetti. Sliced cheese. Vegetable salad. Cake. Pears. Rolls—butter. Tea—milk.
T. B.'S		
Stewed figs. Cream of wheat. Soft-cooked eggs. Muffins—butter. Coffee—milk.	Vegetable soup. Roast veal—gravy. Browned potatoes. Parsnips. Fruit jello. Bread—butter. Tea—milk.	Soup. Italienne spaghetti. Sliced cheese. Cake. Vegetable salad. Pears—rolls—butter. Tea—milk.
SOFTS		
Stewed figs. Cream of wheat. Soft-cooked eggs. Toast—butter. Coffee—milk.	Vegetable soup. Mashed potatoes. Purée spinach. Fruit jello. Toast—butter. Tea—milk.	Soup. Creamed spaghetti. Baked potatoes. Pears. Toast—butter. Tea—milk.

MENU—FEBRUARY 2, 1928, UNITED STATES MARINE HOSPITAL NO. 5—Continued

Breakfast	Dinner	Supper
	VEGETABLES AND NEPHRITICS	
Stewed figs. Cream of wheat. Soft-cooked eggs. Muffins—butter. Coffee—milk.	Vegetable soup. Browned potatoes. Parsnips. Spinach. Fruit jello. Bread—butter. Tea—milk.	Italienne spaghetti. Stewed tomatoes. Vegetable salad. Cake—pears. Rolls—butter. Tea—milk.
	LIQUIDS	
Fruit juice. Gruel. Coffee—milk.	Soup. Jello. Tea—milk.	Soup. Custard. Tea—milk.

Chief Dietitian, A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
	SUNDAY, MARCH 1, 1928	
Stewed prunes. Corn flakes. Bacon. Toast—butter. Coffee—milk.	Barley soup. Celery—olives. Roast chicken—dressing. Mashed potatoes—gravy. Asparagus. Caramel ice cream. Bread—butter. Tea—milk.	Cold meat. Fried potatoes. Pickles. Cherries. Cookies. Bread—butter. Tea—milk.
	MONDAY, MARCH 2, 1928	
Oranges. Pettijohn's. Scrambled eggs. Corn bread—butter. Coffee—milk.	Vegetable soup. Roast pork—gravy. Sweetpotatoes. Stewed corn. Bread—butter. Bread pudding. Tea—milk.	Steak. French fried potatoes. Lettuce salad. Prune plums. Rolls—butter. Tea—milk.
	TUESDAY, MARCH 3, 1928	
Stewed prunes. Cream of wheat. Sausage. Hot cakes—sirup. Coffee—milk.	Lima bean soup. Roast beef—gravy. Browned potatoes. Wax beans. Mincemeat pie. Bread—butter. Tea—milk.	Creamed dried beef. Baked potatoes. Fruit salad. Rolls—butter. Tea—milk.
	WEDNESDAY, MARCH 4, 1928	
Apples. Oatmeal. Soft-cooked eggs. Muffins—butter. Coffee—milk.	Noodle soup. Veal stew—dumplings. Mashed potatoes. Baked squash. Rice pudding. Bread—butter. Tea—milk.	Frankfurters. Sauerkraut. Jacket potatoes. Rolls—butter. Sliced pineapple. Cake. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
THURSDAY, MARCH 5, 1928		
Stewed figs. Pettijohn's. Bacon. Hot biscuit—butter. Coffee—milk.	Barley soup. Baked ham. Parsley potatoes. Spinach. Baked apples. Bread—butter. Tea—milk.	Italienne spaghetti. Baked potatoes. Cabbage salad. Rolls—butter. Sliced peaches. Tea—milk.
FRIDAY, MARCH 6, 1928		
Prunes. Cream of wheat. Omelet. Muffins—butter. Coffee—milk.	Clear tomato soup. Sautéed whitefish. Escalloped potatoes. Buttered beets. Pumpkin pie. Bread—butter. Tea—milk.	Cold meat—cheese. Baked Lima beans. Lettuce salad. Thousand Island dressing. Rolls—butter. Pears. Tea—milk.
SATURDAY, MARCH 7, 1928		
Stewed apricots. Oatmeal. Sausage. Corn bread—butter. Coffee—milk.	Vegetable soup. Veal cutlets—gravy. Potatoes. Buttered peas. Boston cream pie. Bread—butter. Tea—milk.	Baked hash. Stewed tomatoes. Dill pickles. Rolls—butter. Apple sauce. Tea—milk.

Chief Dietitian, A. L. S.

MENU—MARCH 6, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Apples. Cream of wheat. Omelet. Muffins—butter. Coffee—milk.	Clear tomato soup. Sautéed whitefish. Escalloped potatoes. Buttered beets. Pumpkin pie. Bread—butter. Tea—milk.	Cold meat—cheese. Baked Lima beans. Lettuce salad. Thousand Island dressing. Rolls—butter. Pears. Tea—milk.
T. B.'S		
Apples. Cream of wheat. Omelet. Muffins—butter. Coffee—milk.	Clear tomato soup. Sautéed whitefish. Escalloped potatoes. Buttered beets. Pumpkin pie. Bread—butter. Tea—milk.	Cold meat—cheese. Baked Lima beans. Lettuce salad. Thousand Island dressing. Rolls—butter. Pears. Tea—milk.
SOFTS		
Oranges. Soft-cooked eggs. Cream of wheat. Toast—butter. Coffee—milk.	Clear tomato soup. Baked whitefish. Mashed potatoes. Purée of beets. Custard. Toast—butter. Tea—milk.	Soup. Baked potatoes. Cream tuna on toast. Pears. Toast—butter. Tea—milk.

MENU—MARCH 6, 1928, UNITED STATES MARINE HOSPITAL, NO. 5—Continued

Breakfast	Dinner	Supper
NEPHRITICS AND VEGETABLES		
Apples. Cream of wheat. Omelet. Muffins—butter. Coffee—milk.	Clear tomato soup. Sautéed whitefish. Escalloped potatoes. Buttered beets. Pumpkin pie. Bread—butter. Tea—milk.	Soup. Baked potatoes. Baked Lima beans. Lettuce salad. Rolls—butter. Pears. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Clear tomato soup. Boiled custard. Tea—milk.	Soup. Jello. Tea—milk.

Chief dietitian, A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, APRIL 1, 1928		
Oranges. Shredded wheat. Soft-cooked eggs. Toast—butter. Coffee—milk.	Noodle soup. Celery—olives. Chicken fricassee—dumplings. Candied sweetpotatoes. Buttered cauliflower. Vanilla ice cream. Bread—butter—tea.	Italienne spaghetti. Vegetable salad. Cheese. Rolls—butter. Sliced peaches. Tea—milk.
MONDAY, APRIL 2, 1928		
Stewed prunes. Cream of wheat. Mackerel. Muffins—butter. Coffee—milk.	Navy bean soup. Spareribs. Jacket potatoes. Sauerkraut. Pumpkin pie. Bread—butter—tea.	Steak. French fried potatoes. Fried onions. Beet relish. Sliced pineapple. Rolls—butter. Tea—milk.
TUESDAY, APRIL 3, 1928		
Apples. Oatmeal. Sausage—hot cakes. Sirup—butter. Coffee—milk.	Vegetable soup. Roast veal. Butter—bread. Browned potatoes. Rutabagas. Tapioca cream. Tea—milk.	Beef stew and vegetables. Baked potatoes. Lettuce salad. Cake. Rolls—butter. Tea—milk.
WEDNESDAY, APRIL 4, 1928		
Stewed peaches. Cream of wheat. Soft-cooked eggs. Corn bread—butter. Coffee—milk.	Split-pea soup. Roast beef. Mashed potatoes. Buttered peas. Caramel pudding. Bread—butter—tea.	Oyster stew. Celery—pickles. Fried potatoes. Pears—cookies. Rolls—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
	THURSDAY, APRIL 5, 1928	
Bananas. Pettijohn's. Bacon. Muffins—butter. Coffee—milk.	Vermicelli soup. Liver and onions. Lyonnaise potatoes. Buttered beets. Baked apples. Bread—butter. Tea—milk.	Pork chops Baked potatoes. Lettuce salad. Green gage plums. Rolls—butter. Tea—milk.
	FRIDAY, APRIL 6, 1928	
Stewed prunes. Oatmeal. Omelet. Corn bread—butter. Coffee—milk.	Tomato soup. Salmon loaf—egg sauce. Escalloped potatoes. Stewed corn. Apple pie—cheese. Bread—butter—tea.	Baked beans. Spinach. Hard-boiled eggs. Fruit salad. Rolls—butter. Tea—milk.
	SATURDAY, APRIL 7, 1928	
Stewed figs. Pettijohn's. Hash. Hot biscuits—butter. Coffee—milk.	Barley soup. Roast pork. Browned potatoes. Wax beans. Bread pudding. Bread—butter. Tea—milk.	Creamed dried beef. Baked potatoes. Cabbage salad. Rolls—butter. Cherries. Tea—milk.

Chief Dietitian, A. L. S.

MENU—APRIL 1, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
	REGULAR AND PERSONNEL	
Oranges. Shredded wheat. Soft-cooked eggs. Toast—butter. Coffee—milk.	Noodle soup. Celery—olives. Chicken fricassee. Dumplings. Candied sweetpotatoes. Buttered cauliflower. Vanilla ice cream. Bread—butter. Tea—milk.	Spaghetti Italienne. Vegetable salad. Rolls—butter. Sliced peaches. Sliced cheese. Tea—milk.
	T. B.'S	
Oranges. Shredded wheat. Soft-cooked eggs. Toast—butter. Coffee—milk.	Noodle soup. Celery—olives. Chicken fricassee. Dumplings. Candied sweetpotatoes. Buttered cauliflower. Vanilla ice cream. Bread—butter. Tea—milk.	Soup. Spaghetti Italienne. Vegetable salad. Rolls—butter. Sliced peaches. Sliced cheese. Tea—milk.
	SOFTS	
Oranges. Oatmeal. Soft-cooked eggs. Toast—butter. Coffee—milk.	Noodle soup. Minced chicken. Mashed potatoes. Puréed cauliflower Vanilla ice cream. Toast—butter. Tea—milk.	Soup. Milk toast. Asparagus, buttered. Sliced peaches. Toast—butter. Tea—milk.

MENU—APRIL 1, 1928, UNITED STATES MARINE HOSPITAL NO. 5—Continued

Breakfast	Dinner	Supper
NEPHRITICS AND VEGETABLES		
Oranges. Shredded wheat 1 soft-cooked egg. Toast—butter. Coffee—milk.	Noodle soup. Celery—olives. Chicken fricassee. Dumplings. Candied sweetpotatoes. Buttered cauliflower Vanilla ice cream. Bread—butter. Tea—milk.	Soup. Vegetable salad. Rolls—butter. Spaghetti. Sliced peaches. Tea—milk.
LIQUIDS		
Fruit juice. Gruel Coffee—milk.	Soup. Ice cream. Tea—milk.	Soup. Jello. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, MAY 1, 1928		
Bananas. Corn flakes. Soft-cooked eggs. Toast—butter. Coffee—milk.	Noodle soup. Olives—radishes. Chicken, smothered—gravy. Mashed potatoes. Buttered wax beans. Caramel ice cream. Bread—butter—tea.	Cold meat. Potato salad. Peaches. Bread—butter. Tea—milk.
MONDAY, MAY 2, 1928		
Stewed prunes. Oatmeal. Bacon. Corn bread—butter. Coffee—milk.	Vegetable soup. Roast veal. Browned potatoes. Stewed tomatoes. Bread pudding. Bread—butter. Tea—milk.	Liver and onions. Baked potatoes. Lettuce. Thousand Island Dressing. Kale—plums. Rolls—butter. Tea—milk.
TUESDAY, MAY 3, 1928		
Apples. Cream of barley. Sausage—hot cakes. Butter—sirup. Coffee—milk.	Potato soup. Stuffed veal hearts. Beet pickles. Stewed corn. Parsley potatoes. Apple pie—cheese. Bread—butter—coffee.	Steak. French fried potatoes. Green onions. Rolls—butter. Sliced pineapple. Tea—milk.
WEDNESDAY, MAY 4, 1928		
Rhubarb sauce. Oatmeal. Omelet. Hot biscuits—butter. Coffee—milk.	Barley soup. Roast pork—gravy. Mashed potatoes. Buttered peas. Brown Betty. Bread—butter—tea.	Chop suey—rice. Spinach and egg. Fruit salad. Rolls—butter. Tea—milk.

MENU FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
THURSDAY, MAY 5, 1928		
Stewed figs. Cream of wheat. Hash. Muffins—butter. Coffee—milk.	Vermicelli soup. Pot roast—vegetables. Parsley potatoes. Peach tapioca. Bread—butter—tea.	Frankfurters. Jacket potatoes. Cabbage salad. Rolls—butter. Apricots. Tea—milk.
FRIDAY, MAY 6, 1928		
Grapefruit. Wheatena. Fried eggs. Coffee cake—butter. Coffee—milk.	Tomato soup. Sautéed whitefish. Escalloped potatoes. Wax beans. Rhubarb pie. Bread—butter. Tea—milk.	Deviled eggs. Cottage cheese salad. Baked Lima beans. Raspberries. Rolls—butter. Tea—milk.
SATURDAY, MAY 7, 1928		
Stewed peaches. Oatmeal. Bacon. Corn bread—butter. Coffee—milk.	Bean soup. Spareribs—kraut. Boiled potatoes. Baked apples. Rolls—butter. Tea—milk.	Cold meat. Buttered asparagus. Fried potatoes. Lettuce salad. Rolls—butter. Pears. Tea—milk.

Chief Dietitian A. L. S.

MENU—MAY 3, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Apples. Cream of barley. Sausage. Hot cakes. Sirup—butter. Coffee—milk.	Potato soup. Stuffed hearts. Pickled beets. Stewed corn. Parsley potatoes. Apple pie—cheese. Bread—butter. Tea—milk.	Steak. French fried potatoes. Green onions. Rolls—butter. Sliced pineapple. Tea—milk.
T. B.'S		
Apples. Cream of barley. Sausage. Toast—butter. Coffee—milk.	Potato soup. Stuffed hearts. Pickled beets. Stewed corn. Parsley potatoes. Apple pie—cheese. Bread—butter. Tea—milk.	Soup. Steak. French fried potatoes. Creamed onions. Rolls—butter. Sliced pineapple. Tea—milk.
SOFTS		
Oranges. Cream of barley. Soft-cooked eggs. Toast—butter. Coffee—milk.	Potato soup. Purée string beans. Mashed potatoes. Apple sauce. Toast—butter. Coffee—milk.	Soup. Beet purée. Creamed potatoes. Sliced peaches. Toast—butter. Tea—milk.

MENU—MAY 3, 1928, UNITED STATES MARINE HOSPITAL NO. 5—Continued

Breakfast	Dinner	Supper
	VEGETABLES AND NEPHRITICS	
Apples. Cream of barley. Jam. Toast—butter. Coffee—milk.	Potato soup. Buttered beets. Stewed corn. Parsley potatoes. Apple pie—cheese. Bread—butter. Coffee.	Soup. French fried potatoes. String beans. Green onions. Rolls—butter. Sliced pineapple. Tea—milk.
	LIQUIDS	
Fruit juice. Gruel. Coffee—milk.	Strained soup. Jello. Coffee—milk.	Soup. Junket. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
	SUNDAY, JUNE 1, 1928	
Stewed prunes. Corn flakes. Soft-cooked eggs. Toast—butter. Coffee—milk.	Corn soup. Celery—radishes. Roast chicken—dressing. Buttered asparagus. New potatoes. Fresh strawberry ice cream. Bread—butter—tea.	Cold meat. Potatoes au gratin. Sliced tomatoes. Pears. Cookies. Bread—butter. Tea.
	MONDAY, JUNE 2, 1928	
Cantaloupes. Pettijohn's. Bacon. Hot biscuit—honey. Coffee—milk.	Vegetable soup. Stuffed veal hearts. Mashed potatoes—gravy. Beet relish. Buttered peas. Apple pie. Bread—butter—tea.	Steak. French fried potatoes. Lettuce salad. Rolls—butter. Plums. Tea—milk.
	TUESDAY, JUNE 3, 1928	
Stewed peaches. Cream of wheat. Sausage. Corn bread—butter. Coffee—milk.	Barley soup. Roast beef. Browned potatoes. Summer squash. Fruit jello. Bread—butter—tea.	Baked beans. Cheese. Combination salad. Peaches, sliced. Rolls—butter. Cake—tea—milk.
	WEDNESDAY, JUNE 4, 1928	
Bananas. Oatmeal. Scrambled eggs. Muffins—butter. Coffee—milk.	Tomato soup. Lamb stew and vegetables. Boiled potatoes. Caramel pudding. Bread—butter—tea.	Pork chops. Hashed browned potatoes. Radishes—onions. Sliced pineapple. Bread—butter—tea.
	THURSDAY, JUNE 5, 1928	
Stewed figs. Ralstons. Bacon. Corn muffins—butter. Coffee—milk.	Split pea soup. Pot roast. Browned potatoes. Buttered carrots. Pineapple ice. Bread—butter—tea.	Veal cutlets. Buttered potatoes. Cucumbers and onions relish. Raspberries. Rolls—butter—tea.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
FRIDAY, JUNE 6, 1928		
Oranges. Bran flakes. Eggs. Hot biscuit—butter. Coffee—milk.	Cream of asparagus soup. Baked halibut. Tartar sauce. Green beans. Parsley potatoes. Strawberry shortcake. Bread—butter—tea.	Hamburg loaf—gravy. Jacket potatoes. Lettuce salad. Apricots. Rolls—butter—tea.
SATURDAY, JUNE 7, 1928		
Apple sauce. Hominy grits. Hash. Muffins—butter. Coffee—milk.	Vermicelli soup. Spareribs. Jacket potatoes. Cabbage. Rice pudding. Bread—butter. Tea—milk.	Cold meat. Lyonnaise potatoes. Vegetable salad. Loganberries. Rolls—butter—tea.

Chief Dietitian A. L. S.

MENU—JUNE 4, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Bananas. Oatmeal. Scrambled eggs. Muffins—butter. Coffee—milk.	Tomato soup. Lamb stew and vegetables. Boiled potatoes. Caramel pudding. Bread—butter—tea.	Pork chops. Hashed browned potatoes. Radishes—onions. Sliced pineapple. Bread—butter—tea.
T. B.'S		
Bananas. Oatmeal. Scrambled eggs. Muffins—butter. Coffee—milk.	Tomato soup. Lamb stew and vegetables. Boiled potatoes. Caramel pudding. Bread—butter. Tea—milk.	Soup. Pork chops. Hashed browned potatoes. Radishes—onions. Sliced pineapple. Bread—butter. Tea—milk.
SOFTS		
Oranges. Oatmeal. Soft-scrambled eggs. Toast—butter. Coffee—milk.	Tomato soup. Stewed tomatoes. Rice, buttered. Caramel pudding. Toast—butter. Tea—milk.	Soup. Buttered asparagus. Baked potatoes. White cherries. Toast—butter. Tea—milk.
NEPHRITICS AND VEGETABLES		
Bananas. Oatmeal. Scrambled eggs. Muffins—butter. Coffee—milk.	Tomato soup. Stewed vegetables. Boiled potatoes. Shredded lettuce. Caramel pudding. Bread—butter. Tea—milk.	Soup. Buttered asparagus. Hashed browned potatoes. Radishes—onions. Sliced pineapple. Bread—butter. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Beef bouillon. Eggnog. Tea—milk.	Soup. Jello and cream. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, JULY 1, 1928		
Red plums. Corn flakes. Soft-cooked eggs Toast—butter. Coffee—milk.	Clear tomato soup. Celery—olives. Fried chicken—gravy. New potatoes. Buttered green beans. Cherry ice cream. Tea—bread—butter.	Baked beans. Sliced cheese. Lettuce salad. Thousand Island dressing. Pears. Bread—butter. Tea—milk.
MONDAY, JULY 2, 1928		
Stewed peaches. Ralston's cereal. Sausage. Muffins—butter. Coffee—milk.	Vegetable soup. Veal cutlets. Browned potatoes. Buttered cabbage. Brown Betty. Bread—butter. Tea—milk.	Beef stew. Jacket potatoes. Combination salad. Rolls—butter. Sliced pineapple. Cake. Tea—milk.
TUESDAY, JULY 3, 1928		
Cantaloupe. Oatmeal. Hash. Hot biscuits—honey. Coffee—milk.	Vermicelli soup. Baked hearts—dressing. Buttered potatoes—gravy. Beet relish. Buttered carrots. Strawberry shortcake. Bread—butter—tea.	Pork chops. Hashed browned potatoes. Cabbage slaw. Rolls—butter. Plums. Tea—milk.
WEDNESDAY, JULY 4, 1928		
Stewed prunes. Bran flakes. Omelet. Corn bread—butter. Coffee—milk.	Corn soup. Baked ham—raisin sauce. Buttered potatoes. Pickles. Spinach. Pineapple ice. Bread—butter—tea.	Cold meat. Potato salad. Sliced peaches. Cookies. Bread—butter. Tea—milk.
THURSDAY, JULY 5, 1928		
Apples. Cream of wheat. Sausage. Blueberry muffins—butter. Coffee—milk.	Noodle soup. New England boiled dinner with vegetables. Peach tapioca. Bread—butter. Tea—milk.	Steak. French fried potatoes. Combination salad. Rolls—butter. Apricots. Tea—milk.
FRIDAY, JULY 6, 1928		
Bananas. Pettijohn's. Fried eggs. Hot biscuit—apple butter. Coffee—milk.	Cream of spinach soup. Trout. Parsley potatoes. Sliced cucumbers. Summer squash. Apple pie—cheese. Bread—butter—tea.	Hash. Asparagus salad. Cottage cheese. Rolls—butter. Blackberries. Tea—milk.
SATURDAY, JULY 7, 1928		
Stewed figs. Wheatena. Bacon. Corn muffins—butter. Coffee—milk.	Barley soup. Liver—bacon. Potatoes, boiled. Buttered peas. Baked apples. Bread—butter—tea.	Cold meat. Italienne spaghetti. Lettuce salad. Rolls—butter. Greengage plums. Tea—milk.

Chief Dietitian A. L. S.

MENU—JULY 4, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Stewed prunes. Bran flakes. Omelet. Corn bread—butter. Coffee—milk.	Corn soup. Baked ham—raisin sauce. Buttered potatoes. Pickles. Spinach. Pineapple ice. Bread—butter- tea.	Cold meat. Potato salad. Sliced peaches. Cookies. Bread—butter. Tea—milk.
T. B.'S		
Stewed prunes. Bran flakes. Omelet. Corn bread—butter. Coffee—milk.	Corn soup. Baked ham—rasin sauce. Buttered potatoes. Pickles. Spinach. Pineapple ice. Bread—butter. Tea—milk.	Soup. Cold meat. Potato salad. Cookies. Sliced peaches. Bread—butter. Tea—milk.
SOFTS		
Stewed prunes. Cream of barley. Omelet. Toast—butter. Coffee—milk.	Corn soup. Spinach purée. Mashed potatoes. Pineapple ice. Toast—butter. Tea—milk.	Soup. Creamed tuna on toast. Baked potatoes. Sliced peaches. Toast—butter. Tea—milk.
NEPHRITICS AND VEGETABLES		
Stewed prunes. Bran flakes. Omelet. Corn bread—butter. Coffee—milk.	Corn soup. Buttered potatoes. Sliced tomatoes. Raisin sauce. Spinach. Pineapple ice. Bread—butter. Tea—milk.	Soup. Potato salad. Creamed tuna on toast. Cookies. Sliced peaches. Bread—butter. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Beef broth. Junket. Tea—milk.	Soup. Malted milk. Tea—milk.

Chief Dietitian, A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, AUGUST 1, 1928		
Bananas. Puffed wheat. Soft eggs. Toast—butter. Coffee—milk.	Beef broth—rice. Fried chicken. Mashed potatoes. Buttered cauliflower. Bread—butter. Chocolate ice cream. Tea—milk.	Cold sliced corn beef. Horseradish. Baked potatoes. Lettuce salad—French dressing. Bread—butter. Prune plums. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
MONDAY, AUGUST 2, 1928		
Apples. Oatmeal. Sausage. Hot biscuits—butter. Coffee—milk.	Cream of tomato soup. Roast beef—gravy. Parsley potatoes. Stewed tomatoes. Bread—butter. Fruit jello Tea—milk.	Stuffed green peppers. Red kidney beans. Rolls—butter. Cabbage salad. Pineapple. Cookies. Tea—milk.
TUESDAY, AUGUST 3, 1928		
Stewed prunes. Farina. Omelet. Muffins—butter. Coffee—milk.	Vegetable soup. Roast pork. Buttered beets. Mashed potatoes. Bread—butter. Lemon ice Tea—milk.	Liver and onions. Creamed potatoes. Cucumber salad. Rolls—butter. Baked apple. Tea—milk.
WEDNESDAY, AUGUST 4, 1928		
Peaches. Corn flakes. Bacon. Coffee cake—butter. Coffee—milk.	Cream of corn soup. New England boiled dinner. Bread—butter. Custard pie. Tea—milk.	Macaroni—cheese. Cold cuts. Corn on cob. Sliced tomatoes. Rolls—butter. Watermelon. Tea, iced.
THURSDAY, AUGUST 5, 1928		
Stewed raisins Oatmeal. Sausage. Corn bread—butter. Coffee—milk.	Tomato soup. Roast lamb. Browned potatoes. Buttered carrots—peas. Bread—butter. Brown Betty. Tea—milk.	Pickled pig's feet. Hashed brown potatoes. Wilted lettuce. Rolls—butter. Cake. Sliced peaches. Tea—milk.
FRIDAY, AUGUST 6, 1928		
Oranges. Cream of wheat. Soft eggs. Toast—butter. Coffee—milk.	Cream of tomato soup. Baked halibut—tartar sauce. Mashed potatoes. Buttered squash. Bread—butter. Pineapple sherbet. Tea—milk.	Hash. Potatoes au gratin. Rolls—butter. Fresh plums. Sliced peaches Lemonade. Tea.
SATURDAY, AUGUST 7, 1928		
Stewed prunes. Pettijohn's. Bacon. Muffins—butter. Coffee—milk.	Vegetable soup. Veal cutlets. Mashed potatoes. Buttered beets. Bread—butter. Chocolate pudding. Tea—milk.	Pork and beans. Sliced cheese. Sliced tomato salad. Rolls—butter. Apple sauce. Tea—milk.

Chief Dietitian, A. L.

MENU—AUGUST 4, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Peaches. Corn flakes. Bacon. Coffee cake—butter. Coffee—milk.	Cream of corn soup. New England boiled dinner. Bread and butter. Custard pie. Tea—milk.	Macaroni—cheese. Cold cuts. Corn on cob. Sliced tomatoes. Rolls—butter. Watermelon. Tea, iced.
T. B.'S		
Peaches. Corn flakes. Bacon. Coffee cake—butter. Coffee—milk.	Cream of corn soup. New England boiled dinner. Bread—butter. Custard pie. Tea—milk.	Soup. Macaroni—cheese. Cold cuts. Corn on cob. Sliced tomatoes. Rolls—butter. Watermelon. Tea, iced.
SOFTS		
Stewed peaches. Cream of barley. Bacon. Toast—butter. Coffee—milk.	Cream of corn soup. Purée of buttered carrots. Mashed potatoes. Toast—butter. Custard, baked. Tea—milk.	Soup. Creamed macaroni. Stewed tomatoes. De Lux plums. Toast—butter. Tea—milk.
NEPHRITICS AND VEGETABLES		
Peaches. Corn flakes. Bacon. Coffee cake—butter. Coffee—milk.	Cream of corn soup. Buttered carrots. Mashed potatoes. Celery hearts. Bread—butter. Custard pie. Tea—milk.	Soup. Macaroni—cheese. Corn on cob. Sliced tomatoes. Rolls—butter. Watermelon. Tea, iced—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Beef bouillon. Custard. Tea—milk.	Soup (strained). Chocolate milk. Tea.

Chief Dietitian, A. L. S

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, SEPTEMBER 1, 1928		
Plums. Puffed wheat. Soft eggs. Toast—butter. Coffee—milk.	Cream of tomato soup. Fricassee of chicken. Mashed potatoes. Corn on cob. Bread—butter. Peach ice cream. Tea—milk.	Cold sliced ham. Lyonnaise potatoes. Lettuce—French dressing. Bread—butter. Cantaloupe. Iced tea.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
MONDAY, SEPTEMBER 2, 1928		
Pears. Oatmeal. Bacon. Hot biscuit—butter. Coffee—milk.	Vegetable soup. Roast beef—gravy. Browned potatoes. Buttered lima beans. Bread—butter. Bread pudding. Tea—milk.	Baked hash. Buttered spinach—egg. Tomato salad. Bread—butter. Grapes. Tea—milk.
TUESDAY, SEPTEMBER 3, 1928		
Peaches. Farina. Sausage. Corn muffins—butter. Coffee—milk.	Beef broth—barley. Roast lamb—gravy. Parsley potatoes. Buttered beans. Bread—butter. Pineapple tapioca. Tea—milk.	Liver and onions. Baked potatoes. Cottage cheese salad. Rolls—butter. Watermelon. Tea—milk.
WEDNESDAY, SEPTEMBER 4, 1928		
Oranges. Eggs, scrambled. Muffins—butter. Coffee—milk.	Vegetable soup. Roast pork—gravy. Mashed potatoes. Baked tomatoes. Bread—butter. Jello. Tea—milk.	Cold meats. Potato salad. Corn on cob. Rolls—butter. Watermelon. Tea—milk.
THURSDAY, SEPTEMBER 5, 1928		
Bananas. Corn flakes. Bacon. Coffee cake—butter. Coffee—milk.	Vermicelli soup. Meat loaf. Browned potatoes. Squash. Bread—butter. Caramel ice cream. Tea—milk.	Baked beans. Sliced cheese. Pickled beets. Rolls—butter. Buttered carrots. Cantaloupe. Tea—milk.
FRIDAY, SEPTEMBER 6, 1928		
Stewed prunes. Oatmeal. Soft-boiled eggs. Hot biscuits—marmalade. Coffee—milk.	Cream of celery soup. Sautéed trout—sauce. Parsley potatoes. Corn on cob. Bread—butter. Fresh peach shortcake. Tea—milk.	Beef stew. Steamed potatoes. Cold slaw. Bread—butter. Pears. Tea—milk.
SATURDAY, SEPTEMBER 7, 1928		
Peaches. Cream of wheat. Sausage. Corn bread—butter. Coffee—milk.	Tomato soup. Baked ham. Buttered potatoes. Rice pudding. Milk—tea. Buttered spinach. Bread—butter.	Cold cuts. Fried potatoes. Lettuce salad. Rolls—butter. Watermelon. Tea—milk.

Chief Dietitian A. L. S.

MENU—SEPTEMBER 5, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Bananas. Corn flakes. Bacon. Toast—butter. Coffee—milk.	Vermicelli soup. Meat loaf. Browned potatoes. Squash. Bread—butter. Caramel ice cream. Tea—milk.	Baked beans. Sliced cheese. Buttered carrots. Rolls—butter. Cantaloupe. Tea—milk.
T. B.'S		
Bananas. Corn flakes. Bacon. Toast—butter. Coffee—milk.	Vermicelli soup. Meat loaf. Browned potatoes. Squash. Bread—butter. Caramel ice cream. Coffee—milk.	Soup. Steak. Baked potatoes. Buttered carrots. Pickled beets. Bread—butter. Cantaloupe. Tea—milk.
SOFTS		
Oranges. Wheatena. Soft eggs. Toast—butter. Coffee—milk.	Vermicelli soup. Mashed potatoes. Purée of spinach. Bread—butter. Caramel ice cream. Coffee—milk.	Soup. Baked potatoes. Purée of carrots. Bread—butter. Baked custard. Tea—milk.
NEPHRITICS AND VEGETABLES		
Bananas. Wheatena. Soft eggs. Toast—butter. Coffee—milk.	Vermicelli soup. Mashed potatoes. Squash. Bread—butter. Caramel ice cream. Milk.	Soup. Baked potatoes. Buttered carrots. Pickled beets. Bread—butter. Cantaloupe—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Strained soup. Ice cream. Coffee—milk.	Broth. Jello. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, OCTOBER 7, 1928		
Cantaloupe. Shredded wheat. Soft eggs. Toast—butter. Coffee—milk.	Okra soup. Spanish chicken. Mashed potatoes. Succotash. Celery—olives. Bread—butter. Banana ice cream. Coffee—milk.	Frankfurters. Potato salad. Rolls—butter. Grapes. Cookies. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
MONDAY, OCTOBER 8, 1928		
Oranges. Pettijohn's. Hash. Bread—butter. Coffee—milk.	Split pea soup. Baked ham—raisin sauce. Browned potatoes. Mashed turnips. Bread—butter. Brown Betty. Coffee—milk.	Cold meat. Fried potatoes. Corn on the cob. Radishes. Plain jello. Tea—milk. Rolls—butter.
TUESDAY, OCTOBER 9, 1928		
Stewed figs. Cream of wheat. Bacon. Hot biscuits—butter. Coffee—milk.	Cream of tomato soup. Veal stew with vegetables. Boiled potatoes. Buttered carrots. Bread—butter. Pumpkin pie. Coffee—milk.	Pork chops—gravy. Hominy. Sliced tomatoes—French dressing. Rolls—butter. Apple sauce. Gingerbread. Tea—milk.
WEDNESDAY, OCTOBER 10, 1928		
Bananas. Corn flakes. Soft eggs. Corn bread—butter. Coffee—milk.	Vegetable soup. Roast beef. Mashed potatoes. Fried eggplant. Watermelon. Coffee—milk.	Spanish rice. Pineapple and cheese salad. Rolls—butter. Peach cobbler. Tea—milk.
THURSDAY, OCTOBER 11, 1928		
Prunes. Farina. Bacon. Bran muffins—butter. Coffee—milk.	Beef broth—barley. Roast lamb—gravy. Parsley potatoes. Buttered peas. Bread—butter. Fruit jello. Coffee—milk.	Steak. Hashed browned potatoes. French dressing. Sliced cucumbers. Canned cherries. Tea—milk.
FRIDAY, OCTOBER 12, 1928		
Peaches. Puffed wheat. Sausage. Hot cakes—sirup. Bread—butter. Coffee—milk.	Cream of asparagus soup. Fried fish—tartar sauce. Mashed potatoes. Buttered parsnips. Bread—butter. Apple pie—cheese. Coffee—milk.	Macaroni and cheese. Buttered beets. Vegetable salad. Rolls—butter. Sliced pineapple. Tea—milk.
SATURDAY, OCTOBER 13, 1928		
Grapes. Pettijohn's. Scrambled eggs. Toast—butter. Coffee—milk.	Noodle soup. Roast pork—gravy. Boiled potatoes. Baked squash. Sliced cucumbers. Bread—butter. Ambrosia. Coffee—milk.	Curried veal with rice. Corn on the cob. Lettuce salad. Rolls—butter. Canned plums. Cake. Tea—milk.

Chief Dietitian A. L. S.

MENU—OCTOBER 13, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Grapes. Pettijohn's. Scrambled eggs. Toast—butter. Coffee—milk.	Noodle soup. Roast pork—gravy. Boiled potatoes. Baked squash. Sliced cucumbers. Bread—butter. Ambrosia. Coffee—milk.	Curried veal and rice. Corn on the cob. Lettuce salad. Rolls—butter. Canned plums. Cake. Tea—milk.
T. B.'S		
Grapes. Pettijohn's. Scrambled eggs. Toast—butter. Coffee—milk.	Noodle soup. Roast pork—gravy. Boiled potatoes. Baked squash. Sliced cucumbers. Bread—butter. Ambrosia. Coffee—milk.	Soup. Curried veal and rice. Corn on the cob. Rolls—butter. Canned plums. Lettuce salad. Cake. Tea—milk.
SOFTS		
Apple sauce. Pettijohn's. Soft-cooked egg. Coffee—milk. Toast—butter.	Noodle soup. Baked squash purée. Mashed potatoes. Toast—butter. Jello and cream. Coffee—milk.	Soup. Creamed sweetbreads on toast. Buttered rice. Toast—butter. Canned plums. Tea—milk.
NEPHRITICS AND VEGETABLES		
Grapes. Pettijohn's. Soft-cooked egg. Toast—butter. Coffee—milk.	Noodle soup. Baked squash. Boiled potatoes. Sliced cucumbers. Bread—butter. Ambrosia. Coffee—milk.	Soup. Creamed sweetbreads. Corn on the cob. Lettuce salad. Rolls—butter. Canned plums. Cake—tea—milk.
LIQUIDS		
Orange juice. Cereal gruel. Coffee—milk.	Strained soup. Junket. Coffee—milk.	Beef bouillon. Malted milk. Tea.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, NOVEMBER 4, 1928		
Bananas. Corn flakes. Soft-cooked eggs. Toast—butter. Milk—coffee.	Barley broth. Roast chicken—gravy. Mashed potatoes—dressing. Buttered peas. Cranberry sauce. Grapenut ice cream. Bread—butter. Tea—milk.	Oyster stew—crackers. Celery—olives. Potatoes au gratin. Sliced pineapple. Bread—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
MONDAY, NOVEMBER 5, 1928		
Stewed figs. Farina. Broiled bacon. Corn bread—butter. Coffee—milk.	Rice—chicken soup. Corned beef—cabbage. Boiled potatoes. Cherry cobbler. Bread—butter. Tea—milk.	Steak. French fried potatoes. Coleslaw. Greengage plums. Rolls—butter. Tea—milk.
TUESDAY, NOVEMBER 6, 1928		
Oranges. Pettijohn's. Omelet. Hot muffins—butter. Coffee—milk.	Cream of tomato soup. Roast beef. Browned potatoes. Mashed turnips. Fig tapioca. Bread—butter. Tea—milk.	Hash. Lettuce salad. Cake. Rolls—butter. Apple butter. Tea—milk.
WEDNESDAY, NOVEMBER 7, 1928		
Apples. Oatmeal. Bacon. Hot cakes—butter. Bread—sirup. Coffee—milk.	Purée of split pea soup. Veal cutlets. Mashed potatoes. Bread—butter. Creamed carrots. Washington pie. Tea—milk.	Frankfurters. Sauerkraut. Steamed potatoes. Peaches. Rolls—butter. Tea—milk.
THURSDAY, NOVEMBER 8, 1928		
Stewed prunes. Wheatena. Corned-beef hash. Hot biscuits—butter. Coffee—milk.	Vegetable soup. Baked ham. Parsley potatoes. Spinach. Rice-raisin pudding. Bread—butter. Tea—milk.	Cold cuts. Escalloped potatoes. Lettuce salad. Thousand Island dressing. Rolls—butter. Cherries. Tea—milk.
FRIDAY, NOVEMBER 9, 1928		
Grapes. Oatmeal. Scrambled eggs. Bran muffins—butter—jam. Coffee—milk.	Cream of asparagus soup. Baked salmon. Buttered string beans. Creamed potatoes. Fruit jello. Bread—butter. Tea—milk.	Baked beans. Sliced cheese. Fruit salad. Cake. Rolls—butter. Tea—milk.
SATURDAY, NOVEMBER 10, 1928		
Stewed apricots. Corn-meal mush. Sautéed liver. Hot biscuits—butter. Coffee—milk.	Okra soup. Beef stew—vegetables. Baked potatoes. Chocolate pudding. Bread—butter. Tea—milk.	Pork chops. Lyonnaise potatoes. Pickled beets. Apple sauce. Rolls—butter. Tea—milk.

Chief Dietitian A. L. S.

MENU—NOVEMBER 5, 1928, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Stewed figs. Farina. Broiled bacon. Corn bread—butter. Coffee—milk.	Rice chicken soup. Corned beef—cabbage. Boiled potatoes. Cherry cobbler. Bread—butter. Tea—milk.	Steak. French fried potatoes. Coleslaw. Greengage plums. Rolls—butter. Tea—milk.
T. B.'S		
Stewed figs. Farina. Broiled bacon. Corn bread—butter. Coffee—milk.	Rice chicken soup. Corned beef—cabbage. Boiled potatoes. Cherry cobbler. Bread—butter. Tea—milk.	Soup. Steak. French fried potatoes. Coleslaw. Greengage plums. Rolls—butter. Tea—milk.
SOFTS		
Stewed figs. Farina. Broiled bacon. Corn bread—butter. Coffee—milk.	Rice chicken soup. Stewed tomatoes. Mashed potatoes. Cherry jello. Toast—butter. Tea—milk.	Soup. Goldenrod egg. Baked potatoes. Greengage plums. Toast—butter. Tea—milk.
NEPHRITICS AND VEGETABLES		
Stewed figs. Farina. Broiled bacon. Corn bread—butter. Coffee—milk.	Rice chicken soup. Buttered cabbage. Boiled potatoes. Stewed tomatoes. Cherry cobbler. Bread—butter. Tea—milk.	Soup. Goldenrod egg. French fried potatoes. Coleslaw. Greengage plums. Toast—butter. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Strained chicken rice soup. Jello. Tea—milk.	Soup. Custard. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, DECEMBER 2, 1928		
Oranges. Soft-cooked eggs. Toast—butter. Bran flakes. Coffee—milk.	Okra soup. Fricassee of chicken. Mashed potatoes. Cranberry sauce. Buttered brussel sprouts. Olives. Bread—butter. Vanilla ice cream. Tea—milk.	Oyster stew. Celery. Baked potatoes. Peaches. Rolls—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL—Continued

Breakfast	Dinner	Supper
MONDAY, DECEMBER 3, 1928		
Stewed prunes. Cream of wheat. Bacon. Hot muffins—butter. Coffee—milk.	Rice chicken soup. Roast veal—gravy. Baked potatoes. Buttered parsnips. Baked apples. Bread—butter. Tea—milk.	Steak. French fried potatoes. Buttered beets. Lettuce salad. Pineapple. Rolls—butter. Tea—milk.
TUESDAY, DECEMBER 4, 1928		
Grapefruit. Pettijohn's. Omelet. Hot biscuits—butter. Coffee—milk.	Tomato bouillon. Baked ham—raisin sauce. Parsley potatoes. Stewed corn. Pineapple tapioca. Bread—butter. Tea—milk.	Baked hash. Buttered spinach. Waldorf salad. Cake—raspberries Rolls—butter. Tea—milk.
WEDNESDAY, DECEMBER 5, 1928		
Apples. Farina. Corn bread—butter. Bacon. Coffee—milk.	Cream of asparagus soup. Lamb stew—vegetables. Steamed potatoes. Cherry pie. Bread—butter. Tea—milk.	Pork chops. Baked potatoes. Celery—pickles. Pears. Rolls—butter. Tea—milk.
THURSDAY, DECEMBER 6, 1928		
Stewed figs. Oatmeal. Hot cakes—sirup. Coffee—milk. Sausage. Bread—butter.	Consommé. Roast beef. Mashed potatoes. Baked squash. Chocolate pudding. Bread—butter. Tea—milk.	Creamed dried beef. Baked potatoes. Fruit salad. Finger rolls—butter. Succotash. Tea—milk.
FRIDAY, DECEMBER 7, 1928		
Bananas. Corn flakes. Soft-cooked eggs. Hot muffins—butter. Coffee—milk.	Cream of tomato soup. Finnan haddie. Parsley potatoes. Fresh spinach. Sweet pickles. Lemon cream pie. Bread—butter. Tea—milk.	Cold cuts. Potatoes au gratin. Combination salad. Egg plums. Rolls—butter. Tea—milk.
SATURDAY, DECEMBER 8, 1928		
Grapes. Oatmeal. Hash. Hot biscuits—butter. Coffee—milk.	Noodle soup. Spareribs, braised. Cabbage. Browned potatoes. Fruit jello. Bread—butter. Tea—milk.	Liver and onions. Cottage cheese salad. Baked potatoes. Pickled beets. Spiced cookies. Sliced peaches. Rolls—butter. Tea—milk.

Chief Dietitian A. L. S.

MENU—DECEMBER 8, 1927, UNITED STATES MARINE HOSPITAL NO. 5

Breakfast	Dinner	Supper
REGULAR AND PERSONNEL		
Apples. Oatmeal. Hash. Hot biscuits. Butter. Coffee—milk.	Noodle soup. Braised spareribs. String beans. Browned potatoes. Fruit jello. Bread—butter. Tea—milk.	Steak. Baked potatoes. Cabbage salad. Sliced peaches. Rolls—butter. Spiced cookies. Tea—milk.
T. B.'S		
Apples. Oatmeal. Bacon. Hot biscuits. Butter. Coffee—milk.	Noodle soup. Braised spareribs. String beans. Browned potatoes. Fruit jello. Bread—butter. Tea—milk.	Steak. Baked potatoes. Cabbage salad. Sliced peaches. Spiced cookies. Rolls—butter. Tea—milk.
SOFTS		
Grapefruit. Oatmeal. Bacon. Toast—butter. Coffee—milk.	Noodle soup. Mashed potatoes. Cream purée of peas. Fruit jello. Bread—butter. Tea—milk.	Soup. Baked potatoes. Coddled eggs. Creamed celery. Sliced peaches. Bread—butter. Tea—milk.
NEPHRITIC		
Apples. Oatmeal. Toast—jam. Butter. Coffee—milk.	Noodle soup. Mashed potatoes. Creamed peas. Eggplant. Fruit jello. Bread—butter. Tea—milk.	Soup. Baked potato. Creamed celery. Cabbage salad. Sliced peaches—cookies. Bread—butter. Tea—milk.
LIQUIDS		
Fruit juice. Gruel. Coffee—milk.	Strained noodle soup. Boiled custard. Tea—milk.	Soup. Malted milk. Tea—milk.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, FEBRUARY 10, 1929		
Oranges. Wheatena. Bacon. Toast—butter. Coffee—milk.	Clear soup. Roast chicken—dressing. Cranberry sauce. Mashed potatoes. Cauliflower. Pineapple ice cream. Bread—butter—coffee.	Cold meat. Macaroni and cheese. Combination salad. Pears—cookies. Bread—butter. Tea—milk.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
MONDAY, FEBRUARY 11, 1929		
Stewed prunes. Farina. Scrambled eggs. Biscuits—butter—honey. Coffee—milk.	Clear tomato soup. Roast beef. Mashed potatoes. Creamed cabbage. Pickles. Mince pie. Bread—butter—coffee.	Fried ham. Escalloped potatoes. Lettuce salad. Thousand Island dressing. Pineapple. Rolls—butter. Tea.
TUESDAY, FEBRUARY 12, 1929		
Bananas. Oatmeal. Hot cakes. Sausage. Bread—butter. Coffee—milk.	Vegetable soup. Roast lamb. Buttered parsley potatoes. Pickles. Buttered peas. Tapioca cream. Bread—butter—coffee.	Beef stew. Baked potatoes. Vegetable salad. Peaches. Rolls—butter. Tea.
WEDNESDAY, FEBRUARY 13, 1929		
Stewed figs. Pettijohn's. Creamed codfish. Muffins—butter. Jam. Coffee—milk.	Rice soup. Roast veal—dressing. Browned potatoes. Spinach. Baked apples. Bread—butter—coffee.	Pork chops. Hashed brown potatoes. Bean relish. Loganberries. Rolls—butter. Tea.
THURSDAY, FEBRUARY 14, 1929		
Oranges. Wheatena. Bacon. Coffeecake—butter. Coffee—milk.	Split pea soup. Spare ribs and kraut. Potatoes. Mixed pickles. Caramel pudding. Bread—butter—coffee.	Steak. Fried potatoes. Baked onions. Lettuce salad. Royal Ann cherries. Rolls—butter—tea.
FRIDAY, FEBRUARY 15, 1929		
Apples. Oatmeal. Fried eggs. Biscuits—butter. Jelly. Coffee—milk.	Cream of tomato soup. Baked salmon. Egg sauce. Mashed potatoes. Harvard beets. Coconut-cream pie. Bread—butter—coffee.	Cold meat—cheese. Escalloped potatoes. Combination salad. Greengage plums. Rolls—butter. Tea.
SATURDAY, FEBRUARY 16, 1929		
Stewed prunes. Pettijohn's. Bacon. Muffins—butter. Coffee—milk.	Vegetable soup. Roast beef. Mashed squash. Buttered parsley potatoes. Baked apples. Bread—butter. Coffee.	Frankfurters. Jacket potatoes. Dill pickles. Pineapple. Cake. Rolls—butter. Tea.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, MARCH 17, 1929		
Oranges. Shredded wheat biscuits. Soft-cooked eggs. Toast—butter. Coffee—milk.	Tomato-rice soup. Olives—celery. Smothered chicken—gravy. Buttered string beans. Mashed potatoes. Banana ice cream. Bread—butter—coffee.	Cold meat. Candied sweetpotatoes. Lettuce salad. French dressing. Gingersnaps. Peaches. Rolls—butter—tea.
MONDAY, MARCH 18, 1929		
Stewed prunes. Pettijohn's. Chicken giblets—rice. Bran muffins—butter. Coffee—milk.	Clear soup. Baked ham. Buttered spinach. Parsley potatoes. Baked apples. Bread—butter—coffee.	Steak. French fried potatoes. Green onions—radishes. Sliced pineapple. Rolls—butter. Coffee.
TUESDAY, MARCH 19, 1929		
Bananas. Cream of wheat. Bacon. Hot biscuits—butter. Coffee—milk.	Barley soup. Roast beef—gravy. Mashed potatoes. Buttered tomatoes. Custard pie. Bread—butter—coffee.	Pork chops—gravy. Fried potatoes. Cabbage and pineapple salad. Apricots. Rolls—butter. Tea.
WEDNESDAY, MARCH 20, 1929		
Apples. Oatmeal. Omelet. Corn bread—butter. Coffee—milk.	Cream of tomato soup. Dill pickles. Jacket potatoes. Spareribs—sauerkraut. Caramel pudding. Bread—butter—coffee.	Escalloped oysters—cheese. Baked potatoes. Celery—radishes. Cake. Cherries. Rolls—butter—tea.
THURSDAY, MARCH 21, 1929		
Stewed figs. Ralston's cereal. Hot cakes—sirup. Sausage. Bread—butter. Coffee—milk.	Noodle soup. Roast veal—gravy. Mashed potatoes. Buttered rutabagas. Peach tapioca. Bread—butter—coffee.	Fried ham. Cottage fried potatoes. Fruit salad. Rolls—butter. Tea.
FRIDAY, MARCH 22, 1929		
Stewed apricots. Pettijohn's. Fried eggs. Coffee cake—butter. Coffee—milk.	Navy bean purée. Sweet mixed pickles. Fillet of finnan haddie. Potatoes au gratin. Escalloped corn. Apple pie—cheese. Bread—butter—coffee.	Hash—cheese. Baked Lima beans. Shrimp salad. De Lux plums. Rolls—butter. Tea.
SATURDAY, MARCH 23, 1929		
Apples. Cornmeal mush. Bacon. Hot muffins—butter. Coffee—milk.	Vermicelli soup. Roast pork. Parsley potatoes. Buttered carrots. Rice pudding. Bread—butter—coffee.	Beef stew. Baked potatoes. String-bean relish. Pears. Rolls—butter. Tea.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, SEPTEMBER 22, 1929		
Bananas. Corn flakes. Sausages. Toast—butter. Jelly. Coffee—milk.	Tomato soup. Radishes—celery. Fried chicken—gravy. Buttered wax beans. Mashed potatoes. Caramel ice cream. Bread—butter—coffee.	Cold meats. Escalloped potatoes. Fruit salad. Cookies. Bread—butter. Tea.
MONDAY, SEPTEMBER 23, 1929		
Fresh peaches. Pettijohn's. Soft-cooked eggs. Coffee cake—butter. Coffee—milk.	Split-pea soup. Spareribs. Parsley potatoes. Buttered cabbage. Rice raisin pudding. Bread—butter—coffee.	Steak. French fried potatoes. Sliced tomatoes. Plums. Rolls—butter. Tea.
TUESDAY, SEPTEMBER 24, 1929		
Grapes. Farina. Corn muffins—butter. Bacon. Coffee—milk.	Celery soup. Pot roast—vegetables. Mashed potatoes—gravy. Raspberry pie. Bread—butter. Coffee.	Pork chops. Lettuce salad. Baked potatoes. French dressing. Apricots. Rolls—butter—tea.
WEDNESDAY, SEPTEMBER 25, 1929		
Pears. Oatmeal. Scrambled eggs. Hot biscuits—butter—honey. Coffee—milk.	Vermicelli soup. Roast veal. Browned potatoes—gravy. Baked tomatoes. Watermelon. Bread—butter—coffee.	Fried ham. Cottage fried potatoes. Cabbage salad. Sliced pineapple. Rolls—butter. Tea.
THURSDAY, SEPTEMBER 26, 1929		
Cantaloupe. Cream of wheat. Bacon. Corn bread—butter. Coffee—milk.	Vegetable soup. Roast beef—gravy. Mashed potatoes. Buttered carrots. Fruit tapioca. Bread—butter—coffee.	Veal cutlets. Baked potatoes. Sliced tomatoes. Peaches. Rolls—butter. Tea.
FRIDAY, SEPTEMBER 27, 1929		
Grapes. Pettijohn's. Fried eggs. Bran muffins—butter. Coffee—milk.	Cream of asparagus soup. Sautéed fillet of haddock. Tartar sauce. Parsley potatoes. Buttered cauliflower. Lemon cream pie. Bread—butter—coffee.	Hash. Buttered rice. Corn on the cob. Lettuce salad. Raspberries. Rolls—butter. Tea.
SATURDAY, SEPTEMBER 28, 1929		
Fresh peaches. Oatmeal. Bacon. Coffee cake—butter. Coffee—milk.	Barley soup. Roast pork—gravy. Apple sauce. Browned potatoes. Buttered squash. Watermelon. Bread—butter—coffee.	Liver and onions. Baked potatoes. Combination salad. Cake. Pears. Bread—butter. Tea.

Chief Dietitian A. L. S.

MENUS FOR WEEK—REGULAR AND PERSONNEL

Breakfast	Dinner	Supper
SUNDAY, JANUARY 12, 1930		
Tangarines. Corn flakes. Soft-cooked eggs. Toast—butter—jelly. Coffee—milk.	Noodle soup. Celery—crab apple pickles. Baked chicken. Mashed potatoes—gravy. Cauliflower au gratin. Chocolate ice ceam. Bread—butter—coffee.	Escalloped oysters. Celery—pickles. Baked potatoes. Sliced pineapple. Cookies. Bread—butter—tea.
MONDAY, JANUARY 13, 1930		
Stewed prunes. Pettijohn's. Bacon. Corn muffins—butter. Coffee—milk.	Split-pea soup. Roast pork—gravy. Apple sauce. Browned potatoes. Buttered wax beans. Bread pudding. Bread—butter—coffee.	Steak. Candied sweetpotatoes. Cabbage salad. Apricots. Rolls—butter—tea.
TUESDAY, JANUARY 14, 1930		
Apples. Cream of wheat. Omelet. Hot biscuits—butter—honey. Coffee—milk.	Vegetable soup. Pickled beets. Roast beef—gravy. Mashed potatoes. Buttered carrots. Cherry cobbler. Bread—butter—coffee.	Pork chops. Baked potatoes. Lettuce salad. Greengage plums. Rolls—butter—tea.
WEDNESDAY, JANUARY 15, 1930		
Bananas. Oatmeal. Sausage. Hot cakes—sirup. Bread—butter. Coffee—milk.	Cream of tomato soup. Sweet relish. Roast veal—gravy. Browned potatoes. Buttered tomatoes. Brown Betty. Bread—butter—coffee.	Fried ham. Fried hominy. Escalloped potatoes. Combination salad. Loganberries. Rolls—butter—tea.
THURSDAY, JANUARY 16, 1930		
Stewed peaches. Pettijohn's. Bacon. Bran muffins—butter. Coffee—milk.	Vegetable soup. Pot roast with buttered vegetables. Mashed potatoes. Fruit tapioca. Bread—butter—coffee.	Frankfurters. Jacket potatoes. Sauerkraut. Dill pickles. Chocolate cake—pears. Rolls—butter—tea.
FRIDAY, JANUARY 17, 1930		
Apples. Ralston's cereal. Fried corn meal mush—sirup. Soft-cooked eggs—butter. Coffee—milk.	Cream of asparagus soup. Finnan haddie. Mashed potatoes. Buttered corn. Peach pie. Bread—butter—coffee.	Southern hash. Baked beans. Fruit salad. Rolls—butter—tea.
SATURDAY, JANUARY 18, 1930		
Oranges. Oatmeal. Sausage. Muffins—butter. Coffee—milk.	Navy bean purée. Sweet relish. Ham and cabbage. Parsley—potatoes. Boston cream pie. Bread—butter—tea.	Veal cutlets. Baked potatoes. Combination salad. Baked apples. Rolls—butter—coffee.

Chief Dietitian A. L. S.

RECIPES

Recipe for fried bananas.—Fried bananas are an excellent substitute for a fresh vegetable during the winter season. They may be served with meat or as a dessert. Bananas used for this purpose should be large, sweet, and very ripe, as is indicated by the skins' beginning to turn black. When the right kind of bananas are used, the dish will be found to be most delightful.

The bananas are peeled, cut in halves lengthwise, floured, and fried in butter until they are thoroughly heated through.

Fried pineapple.—Slices of pineapple may be fried in the same manner as described above. When thus prepared, pineapple is an excellent relish to be served with chops or steaks, and will take the place of a vegetable.

Recipe for peppermint ice cream.—½ pound peppermint stick candy; 1 pint of milk; 1 pint of 40 per cent cream.

Break the candy up as fine as possible and dissolve it in the cold milk, stirring from time to time; do not heat. Freeze the mixture, and when it begins to solidify add the cream which has been whipped, and finish freezing. This dessert should have a beautiful pink color.

(*Note:* It is essential that peppermint stick candy be used, and not peppermint drops or creams. The stick candy gives a buttery flavor which is essential to obtain a good product. A few drops of peppermint extract may be added to each quart of the dessert to give a slightly stronger flavor, if desired.)

Coddled eggs.—Coddled eggs are advantageous, because they are cooked equally well all the way through and the albumen is in a semi-jellied state, supposedly comparatively easy to digest and less irritating to an inflamed mucous membrane than more firmly coagulated white.

To coddle an egg, place it in a pan of a quart or more capacity and pour a quart of *boiling* water over it; then cover and allow to stand without further heat for 7 to 9 minutes. Only one egg can be cooked in this amount of water, the water should be boiling and the egg should be at about room temperature when the water is applied.

LIVER DIETS

The following information on liver diets has been prepared by Miss Lucy Minnigerode, superintendent of nurses of the Public Health Service:

While it is believed that the raw liver ground very fine and mixed with orange juice, tomato catsup, mayonnaise, or other salad dressings, taken as medicine and not used as food at meal time, is desirable, it is recognized that for some patients this form of treatment is undesirable. For such patients it may be necessary to prepare the cooked liver and to vary the recipes for cooking. The idea prevails that sameness in diet in the kind of food and methods of preparation results in a restriction in the amount which a patient consumes.

These recipes are, therefore, submitted in the expectation that they may be found useful.

The ground raw liver mixed with orange juice, administered between meals at 10 a. m. and 3 p. m. has been found very satisfactory. Three and one-half to four ounces are used in each dose, with the addition of sufficient orange juice to make a total of 8 ounces. While this is not a particularly palatable drink, it is easier to take than it would be to consume half a pound of cooked liver daily over a long period of time.

Ground liver mixed with tomato catsup or salad dressings has been used successfully.

There are on the market a number of extracts of liver which seem to be effective and which are both cheaper and easier to take than the raw product. These extracts are valuable in that the use of some form of liver must be continued over a long period for patients with pernicious anemia, and the difficulty of preparation as well as cost is lessened by their use.

LIVER, KIDNEY, AND FRUIT SALAD RECIPES [2]

In preparing liver for food, the cook must bear in mind the fact that liver is a fragile, granular substance, without dense fiber, bone, or cartilage, loosely held together by connective tissue and filled with blood in many ramifying blood vessels. It must be handled carefully and not cooked too long lest it become tough and leathery, hard, dry, or burned, and so lose its food value. Salt or other condiments should not be added during the cooking, as these tend to toughen the liver. They may be added to suit the taste when eaten by the patient. Much of the value of liver as a food for anemic persons depends upon its blood content, and this should not be washed out in the preparation for cooking.

Fried liver.—The liver is to be cut in thin slices [3] (not too large); having frying pan hot; drop a small piece of butter in and "flow" it over bottom of pan; dip the sliced liver in bread crumbs; lay in pan and cook for a few minutes only until just done and not hard or tough. May be served with fried onion or bacon.

Broiled liver.—Dip the liver in boiling water, remove the skin and broil until brown or done, usually about four minutes. May be "pan broiled" in a little mineral oil.

Liver aspic.—One-half pound of liver, boiled and diced; one can of condensed, plain tomato soup; one tablespoonful of gelatin. Dissolve the gelatin in half a teacupful of cold water, mix with the tomato soup and stir in the liver. Set in the ice box to cool. Slice and serve plain or with mayonnaise.

Liver butter or spread.—Boil and grind fine one-half pound of liver, reduce to a thin paste by rubbing with mayonnaise dressing and add salt, pepper, paprika, grated onion, olives, celery, dill pickle, or any combination thereof to suit the taste.

Liver loaf—3 slices liver, parboiled and ground; 3 strips of bacon, ground; 1 scant cup of cracker crumbs; 2 eggs, beaten; 1 small onion, ground; 1 tablespoonful of cream.

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[2] Quoted from Ralph St. J. Perry in Clinical Medicine and Surgery, Chicago, Ill., December, 1929.

[3] Many prefer slices of liver about one-half inch thick

Mix the ingredients and bake in a loaf, using most of the cracker crumbs to cover the outside.

Liver cocktail.—Trim off the skin around the edges and carefully remove all the veins and tough parts with a sharp knife; rinse in cold water; put the prepared liver through a meat grinder twice, using the finest cutter; place it on ice immediately. One-half pound of liver makes four tablespoonfuls of crushed product.

Sauce.—Prepare a sauce as follows:

Tomato catsup, ½ cup.
Lemon juice, ¼ cup.
Worcestershire sauce, 2 teaspoonfuls.
Chives (finely chopped) ½ teaspoonful.
Salt and pepper, to taste.

Mix the liver and sauce in the proportion of one part crushed liver to two and one-half parts of sauce. Chill thoroughly and serve in a cocktail glass with salt crackers or wafers. In a few days the amount offered, which at first should be very small, may be increased until the patient readily accepts two cocktails daily, each of from two to four tablespoonfuls of crusher liver.

It is essential that the following recommendations be strictly adhered to: Every tough part must be carefully removed and the liver finely ground; the cocktail must be served cold and eaten with crackers; and time must be allowed each patient to "develop a taste" before large amounts are offered.

Baked liver.—Cut a lobe of calf's liver from the main body and, in the cut end, make a pocket large enough to hold a teacup. Prepare a teacupful of dressing (as for turkey) and stuff it into the pocket. Lay several thin slices of lean bacon over the top of or "lace" it through the liver.

Place in oven and bake slowly, basting occasionally, for one hour. (This is known as "mock duck" in Canada.)

Tomatoes stuffed with liver.—Cut off the top one-fourth of the tomato; clean out the inside pulp. Parboil and mash the liver and mix with chopped onion, celery, sweet pepper, boiled rice or barley, sage, and enough of the tomato pulp to make a dough; flavor with pepper, salt, paprika, or chile powder, as desired. Fill the tomato shells with the dough and bake in a quick oven. (Large white onions and green peppers may be stuffed the same way.)

Kidney recipes.—In preparing the kidneys they should be cut in half, lengthwise, and all residual excretion removed by several washings in warm water, then allowed to stand a while in cold water to restore their firmness, thus making slicing and dicing easy. Many of the older recipes for cooking kidneys call for sherry wine, but in these here given, the condition of the patient, and the Volstead law, prohibit its use.

Kidney stew.—Dice and thoroughly wash the kidneys (one veal or four lamb). Take half a cupful of coarsely chopped onion, two bay leaves and a pinch of curry powder; drop all into half a pint of boiling water and let stew for five minutes; salt and pepper to taste.

Fried kidney.—Slice and wash the kidneys and fry them in a slow pan with butter. Kidneys may also be broiled, after similar preparation. Kidneys may be used in place of liver in the preparation of many of the recipes given above.

Orange juice.—Orange juice should be prepared daily from the fresh fruit. One quart will be consumed daily, as the patient will take half a pint (8 ounces) at each meal and on retiring. Thirty drops of dilute hydrochloric acid should be added to each glass of the juice at the time it is imbibed. Keep cool in the ice box. Avoid the commercial, concentrated orange juices, as they contain glucose and preservatives.

Salads.—Raw vegetables have proved one of the most valuable components of the "L. B. K. V." dietary and, to overcome the antipathy of many, these may be served as salads. It has often been noted that, if combinations of almost any raw vegetables be served in fancy-named salads, pleasing to the eye and seasoned to the taste, they will be eaten with a relish by those who would rebel if informed of their nature. By using mayonnaise or French dressings, the salad flavor is given, in addition to the natural flavor of the vegetables. Color combinations of endless variety may be secured by using red and green sweet peppers, red and green cabbage, hard-boiled eggs, celery, spinach, chives, lettuce, tomatoes, and other red, green, and yellow vegetables.

Fruit salads.—Fruit salads prove acceptable and nearly all of the common fruits, berries, and melons can be used in making most palatable salads. Inasmuch as much of the vitamin content of fruits and vegetables is in or immediately under the skin, it is best that they be not peeled unless necessary, as in pineapples, the citrus fruits, melons, and a few others.

The method now in vogue in many kitchens of cutting the vegetables or fruits in large pieces in preparing salads is not suitable for salads prepared for invalids. For the sick the components of the salads should be finely chopped, cut, or sliced, especially those calling for much mastication. The prepared salad may be temptingly served upon lettuce leaves and garnished with parsley, celery leaves, small flowers, or other decorations, but part of the finesse of table etiquette may have to be sacrified to the practical requirements of the invalid. All salads should be served cold.

FORMULAS

FORMULA FOR DESTRUCTION OF ANTS

One pound of sugar is dissolved in one quart of water, to which is added 125 grains of arsenate of soda. The mixture should be boiled and strained; and when it has cooled, small sponges are dipped in it and placed where they can be easily reached by the ants, which will carry the poison to their nests, thus killing the inmates as well as themselves. The greatest precautions should be taken in preparing the sirup and in safeguarding it afterwards to prevent it from poisoning human beings or domestic animals. (Abstract from House Ants, by C. L. Marlatt. Farmers' Bulletin No. 740, U. S. Department of Agriculture.)

FORMULAS FOR TREATING THE TOPS OF LABORATORY DESKS AND TABLES TO MAKE THEM BLACK AND WATERPROOF

Solution A

	Grams
Copper sulphate	125
Potassium chlorate	125
Water	1,000

Boil until the salts are dissolved.

Solution B

	Grams
Anilin chloride	150
Water	1,000

or

Anilin	120
Hydrochloric acid	180
Water	1,000

Directions.—Apply two coats of solution A while hot, putting on the second as soon as the first is dry, follow with two coats of solution B and then allow the wood to dry. Next apply a coat of raw linseed oil to give a polish. Wash off with hot soapsuds to remove excess chemicals and to develop a black color. (From J. Am. Med. Assoc., May 31, 1924, p. 1802.)

Another formula is as follows:

	Cubic centimeters
10 per cent copper sulphate solution	50
Saturated solution of soda carbonate	100
30 per cent solution of anilin	50
Hydrochloric acid	150

Directions.—Apply with a brush and allow to dry; second coat is then applied and allowed to dry over night. With a hot laundry iron melt paraffin of a high melting point and work into the surface. Oxidation takes place as soon as the bubbling paraffin is absorbed by the wood. Remove excess of paraffin by a cloth saturated with xylene. Softwood and oak give the same results. (Samuel Longthan, J. Am. Med. Assoc., Oct. 4, 1924, p. 1097.)

FORMULA NO. 1 FOR MAKING SOAP

1 gallon hot water.
1 can of lye.
1 gallon strained hot fat.

Directions.—The fat should be sweet and clean. It may be strained through a Chinese strainer or, better still, muslin, to remove all foreign material. Cautiously dissolve the lye in the water, then add the hot clean fat slowly, stirring the mixture well with each addition. Finally, pour in tight wooden trays to the thickness of 4 inches.

(The trays are 6 inches high, 18 inches wide, and 30 inches long, and may be made by the station carpenter.) Allow to stand for about 24 hours, then cut in bars. Drying naturally improves the product.

Comment.—This soap has been found to be very satisfactory, and is very easily made. It forms a good lather, is mild, and is not injurious to the hands.

FORMULA NO. 2 FOR SOAP

6 cans lye.
9 quarts water.
36 pounds of clean strained fat.

Cautiously dissolve the lye in the water, add the hot fat slowly, stirring the mixture well with each addition. Pour into tight wooden trays. This soap solidifies very quickly and should be cut into bars when solid.

LIQUID SOAP FOR GENERAL USE

In a 50-gallon tank, pour between 20 and 30 gallons of hot water and dissolve, by boiling in this, 17 pounds of a high-grade soap chip. Dissolve in a separate container 17 pounds of modified soda until it is completely in solution, pour it into the soap solution and stir, then allow mixture to cool.

Poured into cans for distribution in the institution, this mixture produces an exceedingly good soap for general cleaning purposes at a very low cost. (From Hospital Organization and Operation, by Frank E. Chapman, p. 172.)

USE OF HYDROCYANIC ACID GAS AS AN INSECTICIDE

Hydrocyanic acid gas is a death-producing agent and must be handled with great care. So many deaths have resulted from the use of this gas that it may be dangerous to recommend its employment as an insecticide, and therefore all those who consider using it are especially warned of the great risk involved. It is certainly too lethal to be employed around a hospital or other building which is occupied, but might properly be selected for buildings which can be completely vacated, outhouses, or the like.

Hydrocyanic acid gas is usually combined with some other gas which is irritating to some of the sense organs so that it may more easily be determined when hydrocyanic gas is present in dangerous quantities. There are various methods of preparing these gas combinations which will be briefly described below. Zyklon B is a preparation from which the gas mixture may be readily obtained, and as it is convenient, its use is also described. Medical Director Carroll Fox, of the Public Health Service, has very kindly supplied the following information on this subject, which covers the ground very thoroughly:

The can is opened by a special hammer, the man who opens it wearing a gas mask, as the gas is under pressure in the can. It is then immediately emptied down the hold, using a motion as if sowing seed, which distributes it very well. The residue in the holds is left there, as after 10 or 15 minutes it has given off all of its HCN content and is then inert.

In using HCN to kill roaches it is certainly necessary to use it in greater amounts than would be necessary to kill rats, and two or more fumigations would be necessary. It is doubtful whether it would be advisable to use this very poisonous gas in any part of a building which was occupied, such as a hospital; accidents have happened when it has been used in apartment houses.

When used in sufficient amounts and exposed for a long enough time sulphur is very useful. Quarantine experience, I think, will bear that out, and sulphur is very much less dangerous to human beings, but more destructive to metals, paint, and certain food-stuffs than is HCN. Where hydrocyanic acid gas is used in wards or to fumigate bedding, it is very necessary to air the pillows, mattresses, bedding, etc., thoroughly before using them again. Our experience has shown that if this is neglected individuals using it shortly after fumigation may be killed.

The chloro-picrin is merely a warning gas. It plays no particular part in the fumigation except to indicate by its tear-producing effect that HCN is present.

Sodium fluoride should not be left around in containers where food-stuffs are kept because of the possibility of mistaking it for flour or something of that nature and using it for food; but dusting it around in the cracks, backs of drawers, under paper on shelves, etc., is a very useful way of getting rid of cockroaches.

MEMORANDUM RE FUMIGATION OF COCKROACHES WITH HYDROCYANIC ACID GAS

The following memorandum is based on experiments carried out on shipboard and in the laboratory:

1. Cockroaches are quite difficult to kill by fumigation. There are three main reasons:

   (*a*) They are more resistent than many other insects to fumigant gases.

   (*b*) Their normal harborage is in cracks and other small recesses into which fumigating gases do not as a rule penetrate in full concentration.

   (*c*) Their eggs are protected by a chitinous sac and are much more resistent to the fumigant gases than are the insects themselves.

2. The lethal concentration of hydrocyanic acid gas vapor with exposure for two hours is at least 1 ounce per 1,000 cubic feet. This is more than five times the lethal concentration for rats. To kill cock-

roaches in this time they must be exposed in the open and the concentration must be fully maintained.

3. In actual fumigation it is very difficult to close sufficiently tightly the compartments fumigated to maintain an even concentration throughout the period of the exposure. It is even more difficult to arrange the contents and subdivisions of the spaces fumigated so that even diffusion into all parts will be secured. Judging from practical experience it is believed that to maintain in any structure, such as a house or the superstructure of a ship, a concentration that will average 1 ounce per 1,000 cubic feet, an initial dose of at least three ounces per 1,000 cubic feet must be used. Even this dose, however, will not produce lethal concentration to cockroaches in cracks and small retired spaces.

4. To secure penetration of hydrocyanic acid gas or any other fumigant into cracks and small retired spaces requires not so much an increase of the dose as a considerable increase in the time of exposure. During this increased exposure a concentration higher than that desired in the small spaces must be maintained in the fumigated compartment. Since this can be done only by a very careful sealing of the compartment, it becomes evident that to secure penetration in the recesses available to cockroaches is quite a difficult undertaking.

5. The minimum lethal concentration required to kill the eggs of cockroaches is 2 ounces per 1,000 cubic feet and an exposure of two hours so that to kill the eggs it is necessary that the amounts of fumigant used be just twice that required for the insects.

6. Observations on shipboard have borne out the above conclusions. Several thousand cockroaches have been collected from a number of different ships following fumigation, and in all instances some of them have recovered within 24 hours.

7. The large companies manufacturing hydrocyanic acid for fumigating purposes are very conservative in their claims as to the results in killing cockroaches, this attitude being due to numerous failures they have had when this has been attempted.

8. It is the general opinion of all those at this station [4] connected with fumigation that the complete eradication of cockroaches by fumigation with HCN is a difficult and impractical procedure. The continued use of sodium fluoride as a dusting powder has given much better results. Where there is a heavy infestation, however, fumigation may be used tentatively to get rid of most of the cockroaches, this to be followed by sodium fluoride for the eradication of those remaining and of those later hatching.

[4] New York Quarantine Station.

ZYKLON B IN SHIP FUMIGATION [5]

The use of Zyklon B, in accordance with the accompanying instructions, is hereby authorized.

Description.—Zyklon B is a granular earthy substance in sealed tin cans of several convenient sizes, the active ingredients of which are liquid hydrocyanic acid gas plus a persistent lachrymatory warning gas.

Equipment.—(*a*) A special hammer device for opening containers; (*b*) two 10-foot sections of 4-inch U-shaped metal gutter; (*c*) heavy canvas sheets, 5 by 5 feet, or larger, each rigged with a single raising line parceled to each corner of the sheet; (*d*) a supply of old newspapers; (*e*) anticyanide gas masks for each member of fumigating crew; (*f*) test animals in cages; (*g*) a supply of Zyklon B in assorted sizes of containers.

Dosage.—The HCN net content in grams and ounces is printed on the label of each container, and that figure is used as the basis for dosage. (Note that the gross actual weight of the container is of no importance.) The following table gives the dosage for the different sizes of containers furnished, showing in convenient form the number of cubic feet each can will fumigate for rodent destruction and for mosquito destruction. Parts of cans must not be used. Use suitable multiples of different sized containers to the next nearest higher total amount:

Zyklon B		Cubic feet of space will fumigate for rats		
No. of can	HCN content	Holds, provision storerooms; and other rat-infested compartments	Living quarters and superstructures and other spaces not used for stores or cargo	Cubic feet of space will fumigate for mosquitoes, all parts of vessel
	Grams			
1	20	400	800	4,000
2	100	2,000	4,000	20,000
3	500	10,000	20,000	100,000
4	1,200	21,000	42,000	----------

Method of use.—Punch an air hole at one end of the can with the spike end of the special hammer and with the saw-tooth head of the same hammer cut one or more holes in the other end of the can, making each hole with a single blow. Material will then flow readily out of the larger holes. Gas masks must be worn when cans are being opened and the material is being distributed.

[5] Abstract from Foreign Quarantine Division Circular No. 23, U. S. Public Health Service, dated Nov. 26, 1926.

(*a*) *Holds.*—Turn back the corners of the hatch tarpaulins. Lower at least two canvas sheets in each hold, spread out directly beneath opposite hatch corners with the raising line led and secured to main deck. Spread several thicknesses of newspapers on 'tween decks where they will be reached from the deck by sections of metal gutters. Distribute about one-half of total amount of Zyklon B necessary for each hold by pouring this at the corner of the hatch opening so that it will fall and spread evenly upon the canvas sheets on the floor of the hold below. Do not put more than 1,200 grams HCN to each sheet. Distribute the balance of the Zyklon B required by pouring this into the metal gutters placed so that the fumigant will be led to the newspapers in the 'tween decks. Spread it evenly, not over one-half inch in depth, by moving the end of the gutter back and forth. Close hold, draw tarpaulins, and batten down.

(*b*) *Superstructures.*—Spread an area of several thicknesses of newspaper on floor of each compartment; open proper size can and spread contents on newspapers not over one-half inch thick and close compartment.

(*c*) *Cleaning up.*—Following fumigation of holds, remove hatch tarpaulins and raise the canvas sheets containing residue. (Do not allow men on hatch covers or strong backs.) After the superstructure has been opened for not less than 15 minutes and the holds for not less than one hour, fumigators wearing gas masks will roll up the newspapers with residue and dispose of it, usually by throwing overboard. Animal tests should be made before entering the holds.

Following two hours' exposure, the vessel is opened up and ventilated. After one hour the various compartments of the vessel are tested for safety.

As it has been found that certain articles, such as pillows, mattresses, bedding, rugs, curtains, and upholstered furniture, may absorb the gas used in fumigation of vessels and subsequently may give off enough gas to endanger persons using such articles soon after fumigation, you are advised that if such articles are subjected to fumigation they should be thoroughly aired for at least two hours after fumigation is completed.

Except in cases of vessels with quarantinable disease on board, fumigation of such articles is not insisted upon by the Public Health Service, and, if so desired, such articles may be removed from space to be fumigated before fumigation is begun. Removal of such articles, if done, should be made a part of the preparation of the ship for fumigation.

The amounts of chemical reagent and time of exposure used in generating the different gases for the destruction of rodents are as follows:

Hydrocyanic acid-cyanogen chloric mixture, "barrel-generation" method: 4 ounces sodium cyanide, 1.5 ounces sodium chlorate, 17 ounces commercial hydrochloric acid, and 17 ounces water per 1,000 cubic feet of space. Exposure two hours.

Liquid hydrocyanic and cyanogen chloride mixture: 2 ounces of a mixture consisting of 80 per cent of liquid hydrocyanic acid (96 to 98 per cent) and 20 per cent of liquid cyanogen chloride per 1,000 cubic feet of space is sprayed into the vessel under slight pressure from special applicators. Exposure two hours.

After the ship has been under gas for two hours, the men, each wearing a gas mask, open up the hatches, ventilators, doors, etc., from the exterior. Ventilating fans or windsails are used for holds and spaces having poor natural ventilation. The superstructure is not entered for at least 15 minutes after opening up and the holds for at least 1 hour, and in addition a tame rat in a wire cage is lowered to the bottom of each hold and left for at least 5 minutes to test for gas. If the rat is unaffected, the medical officer goes personally or sees one of his men go through all spaces on the ship before he declares it safe and free from gas. Men making this test wear gas masks in the alert position, carry flashlights, and are watched from the dock. A thorough search is made for dead rats. All rats found are brought to the station laboratory for classification, record, and examination for plague infection. The entire process of fumigation takes about six hours.

Vacuum cyanide is found by actual experimentation with hundreds of samples of live lice and ova to penetrate deeply into baggage or clothing bundles if used in proper concentration, length of exposure, and high vacuum. It kills all animal life and is the only known method of killing lice quickly in baggage without opening it and without damage to any fabric or material.

Method: First a vacuum of 20–26 inches obtained, hydrocyanic acid gas generated from sodium cyanide and dilute sulphuric acid is admitted (90 ounces sodium cyanide per 1,000 cubic feet chamber capacity), atmospheric air admitted to drop vacuum to zero, wait for 15 minutes for clothing or 30 minutes for baggage. A second vacuum of 20–26 inches is obtained, then reduced by atmospheric air to zero, the chamber is aired for a few moments by running vacuum pump and the chamber is opened and the contents are removed. If necessary, clothing is given a few minutes' additional airing to remove remaining traces of gas and is then returned to the immigrant.

SPECIAL FORMULAS FOR THE LAUNDRY

For articles which are so badly stained that it is evident that the ordinary laundry process will not suffice, the following procedures [6] are recommended: (1) and (2) are usually to be applied

[6] Abstracts from the Washroom, issued by Procter & Gamble Co., Cincinnati, Ohio.

in the order given and should follow the regular washing process. (3) and (4) are especially for oil and grease stains.

(1) *Built soap soda ash boil.*—Goods are boiled in a solution containing 1 per cent of built soap and 1 per cent soda ash for some three hours or overnight. After boiling, one ordinary suds is given, followed by a rinse and sour. This procedure may be applied in an ordinary washer, leaving the steam valve barely open to keep the bath near the boiling point, or it may be carried out in barrels provided with a live-steam supply. The soap solution may be used several times.

(2) *Permanganate oxalic acid bleach.*—The goods are thoroughly wet in 1½ per cent potassium permanganate solution heated to 150° or 160° F. Remove excess solution by squeezing lightly, then place the goods in a hot bath 150° to 160° F. of oxalic acid 1½ per cent. Allow to remain in bath until all the pink color has disappeared (approximately one minute). If pink color does not disappear at this time, the oxalic bath should be replenished. The goods are now given several hot rinses.

(3) *Gasoline red oil soda ash treatment.*—This is for oil and grease stains. The stain is treated with a mixture of half-and-half gasoline or carbon tetrachloride and red oil (oleic acid). The saturated material is then immersed in a hot solution, 160° to 180° F., containing 5 per cent soda carbonate. The goods are then washed in the ordinary way.

(4) *Caustic soda for paint stains.*—Paint stains may be treated with a 1 per cent caustic soda solution at a temperature of 160° to 180° F. The article is then transferred to a solution of 1 per cent built soap and 1 per cent soda ash and boiled for several hours. Then rinse as usual.

METHOD OF ADDING WASHING SODA FOR SOFTENING HARD WATER

It is necessary to add approximately 1 ounce of soda ash (carbonate of soda) for every grain of hardness per 100 gallons of water, beginning at 6 grains per gallon; below this figure it is necessary to add more soda; that is, the total should be figured out on a basis of 1 ounce to each grain of hardness per 100 gallons, and then an additional ounce added to the result to obtain the correct figures. That is, at—

½ grain per gallon the total amount to be added is 1½ ounces per 100 gallons.
4½ grains per gallon the total amount to be added is 5½ ounces per 100 gallons.
6 grains per gallon the total amount to be added is 6 ounces per 100 gallons.
10 grains per gallon the total amount to be added is 10 ounces per 100 gallons.

Corrections in the total amount will have to be made on this basis at the number of gallons of water actually used in the wheel. If

the hardness of the water is over 5 grains per gallon, the multiple suds formula is not recommended, but instead only two suds.

In washing in hard water it is important that the first rinse should not be higher in the wheel than the height of the last suds. Too much rinse water following the first suds will cause rapid precipitation of metallic soap into the goods which can not be removed. A smaller amount of rinse water permits of some of the soap in the suds to remain and assist in the removal of what is precipitated.

SUGGESTIONS FOR THE PLANTING OF EVERGREENS IN THE HOSPITAL GROUNDS [7]

Evergreens judiciously selected and planted make a tremendous improvement in the appearance of any institution which has no shrubbery of this variety.

For ornamental purposes the evergreen has no peer when distributed among deciduous trees and bushes. It retains its foliage throughout the entire year and requires a minimum amount of attention in the way of pruning and cleaning up of fallen leaves. By planting different varieties, pleasing contrasts in color can be obtained, and their growth is so slow that when they are properly placed the effect obtained will not be destroyed by an increase in size for a number of years, provided a moderate amount of trimming is done.

Before forming a plan to improve the grounds of a hospital a great deal may be learned by visiting well-kept institutions in the neighborhood and noting the arrangements of evergreens, and also by inspecting the better grade of private residences. Many nurseries have specimen groupings of such trees and bushes already set out, and these may be studied to great advantage. Valuable ideas may be obtained simply by being observant as one passes through the high-class districts of a city or through the grounds of an estate or country place which presents an especially handsome appearance. In this way it is possible to find out what trees and plants thrive best in the vicinity in which the hospital is located. Nurserymen will usually give advice on this subject without charge and will, if consulted on the matter, suggest appropriate treatments for the localities which it is desired to improve. Much interesting information can be gleaned from the catalogues issued by the large nurseries.

FORMAL GROUPING OF PLANTS OBSOLETE

The question of good taste enters very largely into the proper grouping plan. No longer does the well-trained gardener set out his flowers or shrubbery in set designs. The practice of arranging colored plants to form a crown, coat of arms, star, or similar geometrical

[7] From an article by the author published in The Modern Hospital, April, 1925.

figure, is obsolete, as these groupings are artificial, and the highest form of art is to imitate nature. Such formal designs were very popular for parks and lawns some years ago, but they offend every tenet of good taste and belong to the period of mounting diamonds in horseshoes, snakes, lizards, or birds. Especially to be avoided is the trimming of trees or bushes into unnatural or fantastic designs. These may be triumphs of a gardener's skill, but there is nothing ornamental about them in the light of modern standards.

Evergreens should not be planted in straight rows or stiff patterns; the better method is to imitate their natural growth, arranging the trees in more or less irregular clumps or masses, duplicating such groupings, however, on each side of a building or roadside so as to give a somewhat symmetrical design to the whole effect when viewed from a distance. In the grounds of every hospital are certain localities which strike the eye immediately, and these will come first to mind when considering how to improve the outside appearance. For convenience of consideration, they will be described under the following headings: Suggested plantings to improve the appearance of the fronts of the most prominent buildings; distribution of evergreens throughout the grounds proper; attractive treatment of the main entrance gate and roadways, also terraces alongside stone steps; varieties of evergreens to plant on shady banks, where grass does not grow well; the masking or concealing of ugly buildings, such as power plants, attendants' quarters, stables; barren banks.

HOW TO IMPROVE FRONT OF BUILDING

A solid mass of evergreens of a suitable size, grouped around the main entrance and in some cases extending along the entire front, will improve the appearance of any building 100 per cent. It is usual to place tall slender trees on each side of the main entrance; then smaller bushy trees are grouped around the tall trees, and still smaller varieties next to these, so that the green line dips down gradually from the highest point alongside the door. These trees are set close enough so that the foliage touches or blends together to produce a solid green bank up against the building.

Slender trees suitable for this purpose are the oriental arborvitae, American arborvitae, which is slightly cheaper, and the red cedar, which is cheaper yet; but the trees are enumerated in the order of their beauty.

The improvement produced in the appearance of a building by a suitable planting of evergreens can be observed by comparing Figures 1 and 2, and the general methods of arrangement in Figures 3 and 4. In Figure 2 the shrubs are set a little too far apart; this is an important matter. Much better effects can be obtained with a given number of plants by setting them in clumps so that they slightly touch,

leaving a bare space in the center if necessary rather than by spreading them out in a thin line with the result that the wall of the building can be seen between the branches. They should be planted close enough to afford a solid bank of green up against the base of the building.

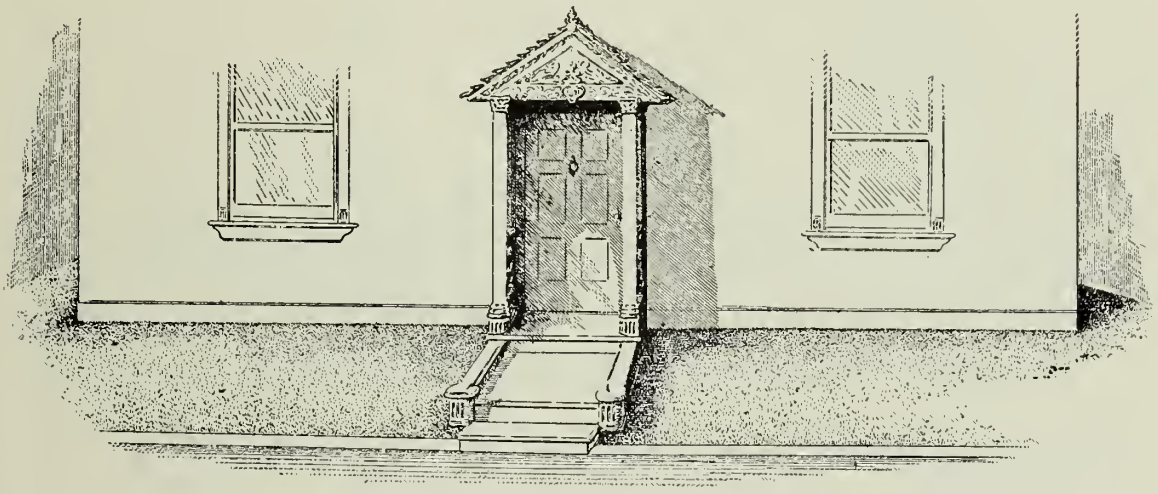

FIGURE 1.—An undecorated doorway, which has an austere appearance

(See fig. 4.) It is true that they will grow, but the growth is slow; and if one desires to secure the best effect immediately, no great space can be allowed for expected increase in size. Later on some of the plants can be removed and set elsewhere if they begin to crowd each other seriously. They should be planted as close to the building line

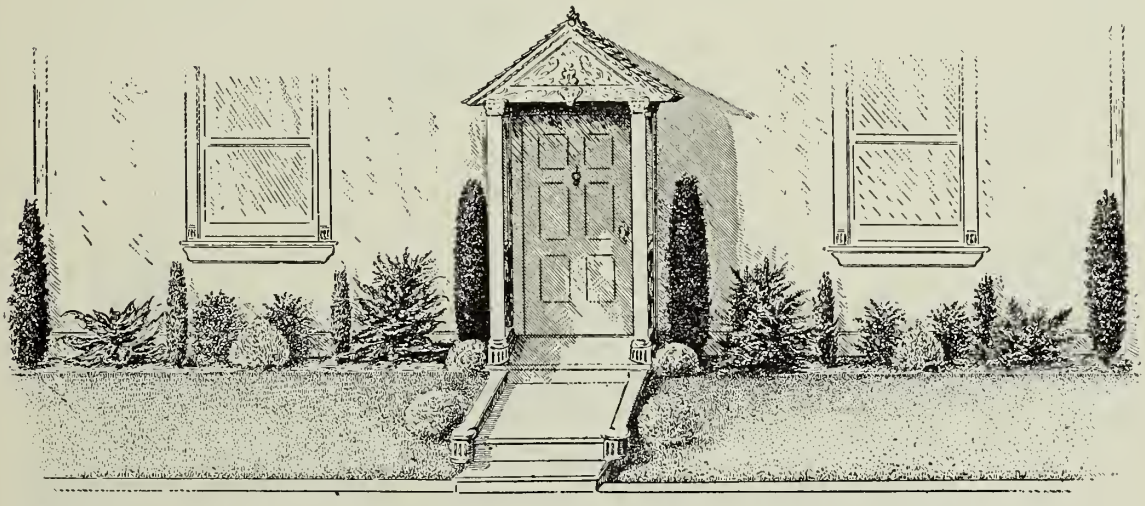

FIGURE 2.—The trees above, enumerated from the doorway to the corner, might be—Oriental arborvitæ; Japanese holly; in front of the holly is a Pfitzer juniper; two Japanese holly trees or Euonymous japonicus; the lightly colored bush in front is a pea-fruited cypress; then an Irish juniper; a Pfitzer juniper; and, on the corner, an Oriental arborvitæ. The low specimens at each of the four corners of the concrete walk are dwarf pines

as is permissible, considering the nature of their growth. The smaller the tree, the closer is should be to the wall.

Trees planted near to buildings are likely to suffer from want of water, and special attention should be given to irrigating such plantings, especially when they have been first set out and during the dry seasons in summer.

At the end of the front of a building it is necessary to run the planting beyond and around the corner a short distance to secure the best effect. (See figs. 3 and 4.)

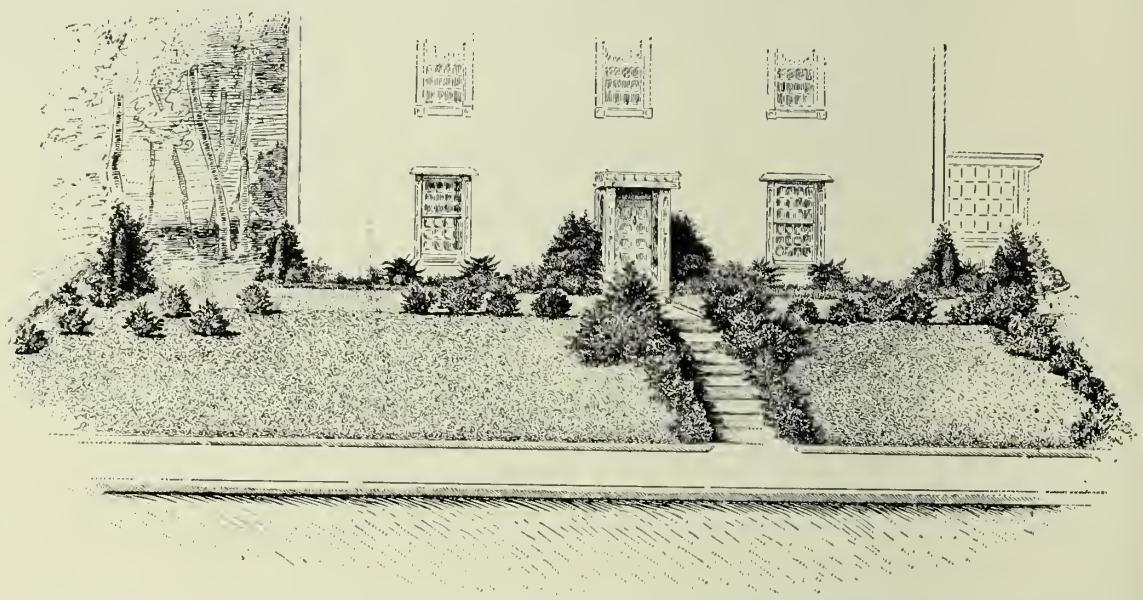

FIGURE 3.—Attractive groupings of types of evergreen mentioned as not being stiff

We plant around the base of a building to hide the splash line and to break the straight line where the structure blends with the soil. The height of the mass of green foliage, however, should depend

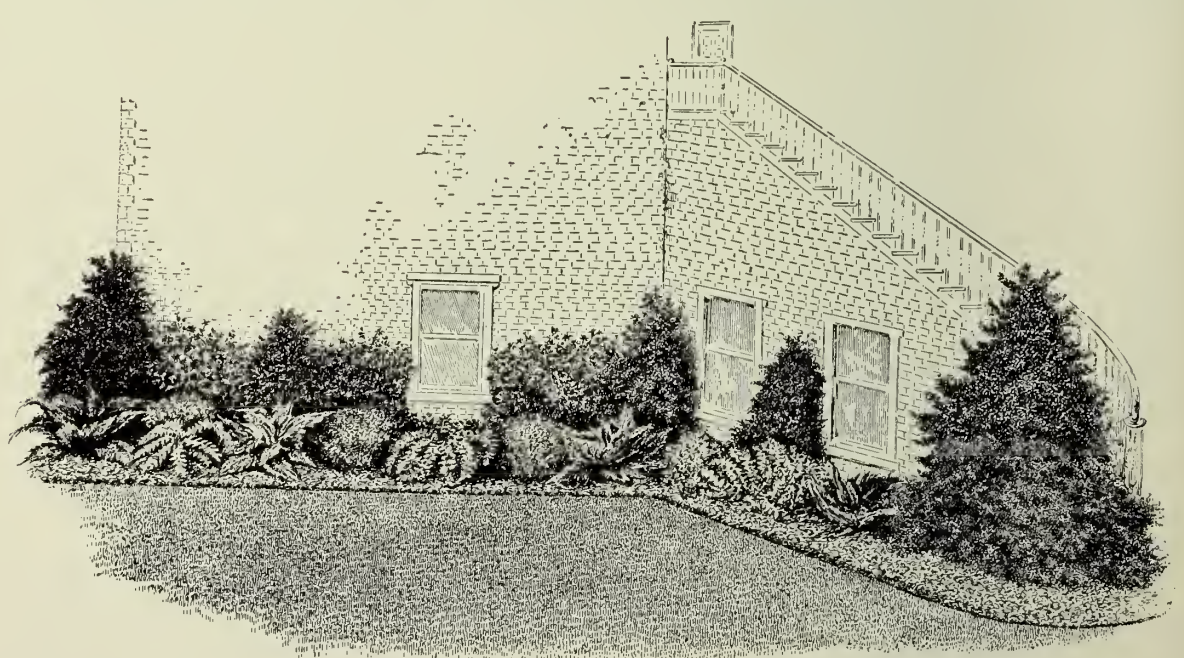

FIGURE 4.—An attractive treatment, especially for the north side of a building. The tall bushes on each end are Japanese holly (such a large growth requires a number of years). The next tallest three trees in the middle are American holly; adjoining these are some rhododendrons; and the still lower plants are drooping andromeda, etc. The low plant forming the border is Japanese spurge

somewhat on the size and height of the building. In no case should any great proportion of the mass be allowed to grow above the sills of the windows. A high line of green at the base of a building is not attractive, particularly if parts of the windows are obscured. It is

permissible, however, to have a higher growth between windows and at the corners or adjoining the ends. (See fig. 3.) The use of larger plants near the windows shown in the illustration would be unattractive and spoil the design very materially.

SWEEPING CURVES EFFECTIVE

The depths of the evergreen planting should not be the same throughout the entire front of the building. A more pleasing effect is obtained by varying the width by sweeping curves, so that the edge of the bed is not parallel to the front of the building. The borders of all evergreen beds should be kept neatly trimmed at all times, as this adds greatly to the appearance of the setting. In Figure 4 a

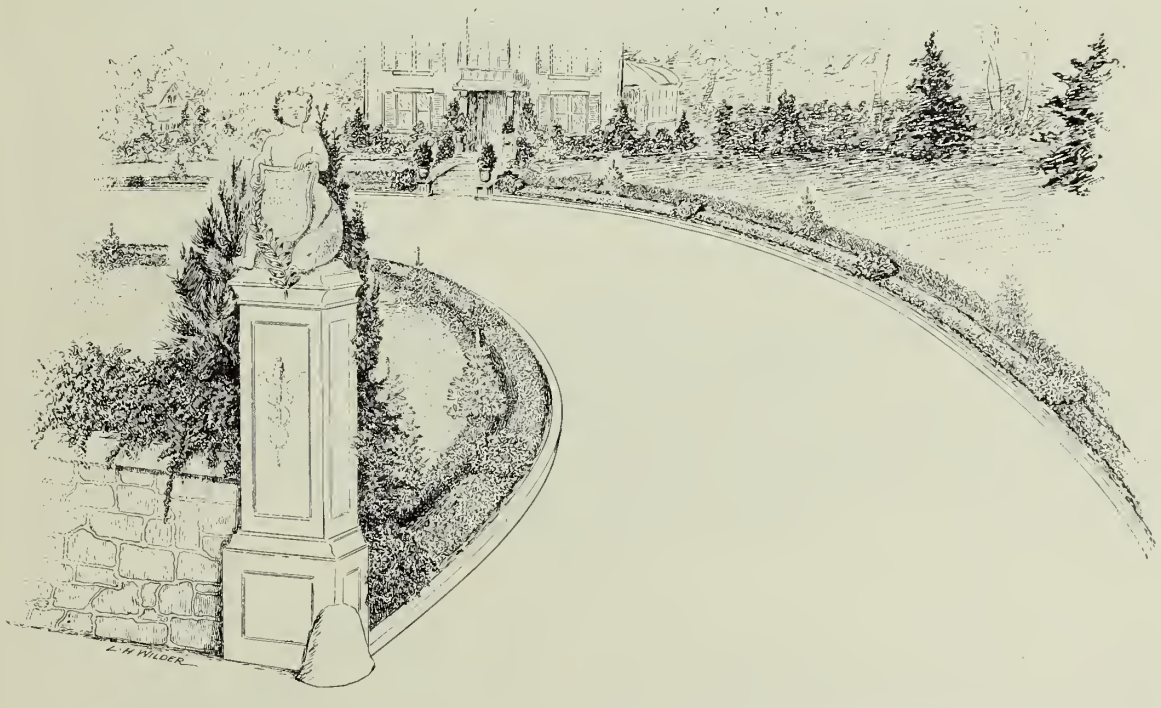

FIGURE 5.—A gateway and road with evergreens and continuous border along the road

better arrangement would have been to make this border not straight, but curved, broadening out at both ends, with the planting narrower in the middle. The treatment, however, is good, avoiding anything like a formal appearance, and the varieties selected are admirable. Rhododendrons need a certain amount of shade and should not be used except under trees or on a northern exposure.

The great objection to many of the evergreens is their stiffness and the care required in placing them to overcome this. Certain varieties, however, are graceful in their contour and the inexperienced are perfectly safe in purchasing them, because in almost any grouping or arrangement they are sure to give pleasing results. In this group may be listed—

Japanese holly (*Ilex crenata*).
Fortune's holly (*Ilex crenata* var. *fortuneii*).
Small leaved Japanese holly (*Ilex crenata* var. *microphylla*).

Japanese yew (*Taxus cuspidata* (not upright)).
Short-leaved Japanese yew (*Taxus cuspidata brevifolia*).
Spreading English yew (*Taxus baccata* var. *repandens*).
American hemlock (*Tsuga canadensis*).
Thread-branched Japanese cypress (*Retinospora filifera*).
Flat junipers, such as the—
Pfitzer juniper (*Juniperus pfitzeriana*).
Purple-spreading juniper (*Juniperus communis depressa*).
Tamarisk-leaved savin juniper (*Juniperus tamariscifolia sabina*)
Dwarf pine (*Pinus montana mughus*).
Japan juniper (*Juniperus japonica*).
To this list may be added for shady places:
Rhododendrons.
Drooping andromeda (*Leucothoe cataesbaei*).
Japanese spurge (*Pachysandra terminalis*).

Almost any sort of grouping of the above varieties, placing the taller ones closer to the building or nearest to the central entrance,

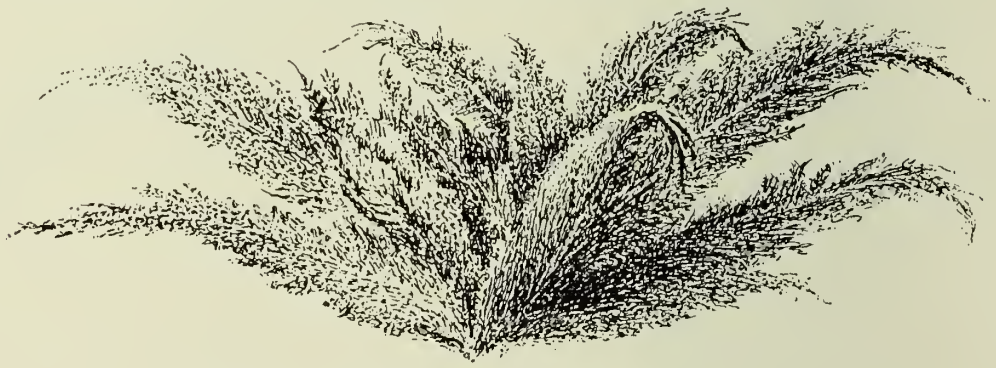

FIGURE 6.—Pfitzer juniper (*Juniperus pfitzeriana*)

will give a pleasing effect. For the sake of variety an evergreen shrub called *Euonymus japonicus* may be planted with them advantageously; also *Abelia grandiflora*, or the bush arbutus. This *Abelia* has a small white arbutuslike flower; it blooms throughout the entire summer and fall and makes a pleasing contrast with the evergreens. It is inexpensive and grows well but slowly.

HANDSOME ARRANGEMENT FOR FRONT OF BUILDING

A very handsome arrangement for the front of a building is Japanese holly close to the building, and next to that smaller specimens of the small-leaved Japanese holly and a border of Japanese spurge (a low evergreen plant which grows about 6 to 8 inches from the ground) or periwinkle. Clumps of this sort, interposed with groups of yew trees, can not fail to give attractive results. Of all the evergreens, the yews are probably the most attractive and easy to place. They have a few very handsome scarlet berries, are slow growing, with beautiful foliage, and do not present a stiff or ungraceful appearance. American holly trees also blend well with the Japanese holly bushes.

A mass of rhododendrons with a border of Japanese spurge is extremely handsome, and can be used to advantage on the north sides of buildings where there is considerable moisture and shade. In such a place a few plants of drooping Andromeda set in at the base

FIGURE 7.—Abelia (*Abelia grandiflora*)

of the rhododendrons will be most effective. Japanese holly also blends very well with the rhododendrons and the Japanese spurge.

WHERE TO PLANT GRASS

There are certain places in the grounds of every hospital where a great deal of rubbish, such as waste paper, is being constantly deposited. These areas are usually in front of certain wards, where patients congregate before or after meals to talk and smoke. It would

FIGURE 8.—Dwarf pine (*Pinus montana mughus*)

be a great mistake to plant groups of bushes in such localities, as the foreign material would lodge in the branches, be unsightly, and could not be easily removed without damage to the plants. For such spaces grass is much to be preferred, as it can be readily policed up. If the area is extensive, one or two yews or Japanese holly bushes might be set out to break the monotony. They will catch only a part of the débris, and can be cleaned up by hand. Ivy may also be trained on the fronts of buildings of this type, as owing to its position on the wall very little of the waste paper and similar matter will lodge therein.

PLANT IN GOOD SOIL

It is common opinion that evergreens will grow almost anywhere and under all conditions. Unfortunately, this is not the case; most of them demand sunshine, and all require good soil and water. In setting out shrubbery of this sort, if the ground is poor, one should always secure some good top soil, make a sufficiently large hole, and place the plant in rich earth. In planting evergreens among deciduous trees most of them should be so placed in the open spaces as to obtain abundant sunshine. Some varieties require much shade, such as the rhododendron and drooping Andromeda, and others will tolerate a certain amount, as, for instance, the hemlock and Japanese spurge. The spruces in general need plenty of sun.

FIGURE 9.—Norway spruce (*Picea excelsa*)

DISTRIBUTION OF EVERGREENS THROUGHOUT GROUNDS

On the lawns a judicious mingling of evergreens with deciduous trees will be found to be most advantageous, the evergreens giving a beautiful contrast with the lighter foliage, and in winter, when covered with snow, becoming especially attractive.

Trees set out alone on the grounds are commonly known as specimen trees. When purchasing trees for this purpose, pains should be taken to see that they are healthy, well developed, and especially that they are symmetrical in form when viewed from all aspects. In selecting such trees in a nursery be sure to walk completely around them, as one side may look well and the other be more or less deformed.

For such specimen trees, Koster's blue spruce is extremely handsome, the body of the tree being dark blue-green, with the tips of the branches a silver gray, affording a wonderful contrast. The Koster may be expensive, but certainly a few can be afforded for placing in conspicuous locations. The Colorado blue spruce somewhat resembles the Koster and is decidedly cheaper. The Norway spruce is a handsome tree, very reasonable in price, and will probably be a stand-by where economy must be given due consideration. The various long-needled pines can be used to good advantage to give variety, the Scotch and Australian varieties being especially attractive. Occasional specimens of the gray cypress (*Retinospora squarrosa*) and the green-plumed cypress (*Retinospora plumosa*) will be valuable addi-

tions, as both of these trees have beautiful, thick, lacy foliage and when properly trimmed will assume a graceful cone shape. The color contrasts pleasingly with that of other evergreens.

Specimen trees should be set out irregularly here and there where they will give the best effect. Other evergreens well adapted for single plantings are the various yews, American holly, and the hemlock.

Special pains should be taken in setting out trees in the grounds to see that they are not placed in regular rows and at regular intervals; and where it is necessary to put them more or less in a row, as along a roadway, they should be slightly staggered and the line broken with an occasional clump. Utilizing different varieties in a formation of this sort will help to avoid a stiff and formal appearance.

The formation of low masses of green by clumping or grouping dwarf varieties of evergreens at various strategic points on the grounds

FIGURE 10.—Yew (*cuspidata*), showing the irregular method of growth

and along the walks always gives a pleasing effect and contrasts with other varieties of foliage. For this purpose the various yews are especially recommended, as well as Japanese holly, Fortune's holly dwarf pine, and the spreading low-growing varieties of juniper.

The Japanese blood-red maple (*Acer palmatus* var. *atropurpureum*) has foliage of an extremely pleasing brownish-red color, which gives a wonderful effect, both with evergreens and deciduous trees. It is a tree of small habit and expensive, but a few specimens scattered throughout the grounds or along the roadways will amply repay the money expended, by the color tone which they add to the general effect.

LAWNS PREFERABLE TO FLOWER BEDS

Unless the station is equipped with a greenhouse and a well-trained gardener, flowers are often a great disappointment. This is especially true where nurses, aides, and other personnel attempt to raise flowers around their quarters. The plants are usually straggly, yield a few

blossoms for a short time only, and the withered stems remain long afterwards, unsightly and undecorative in every sense of the word. Nicely cut lawns are certainly to be recommended rather than poorly kept flower beds.

While it may be inadvisable to attempt to raise flowers, nevertheless some flare of color among the green here and there is most welcome to the eye. This effect may be obtained in various ways by plants which have not the same drawbacks as flowers.

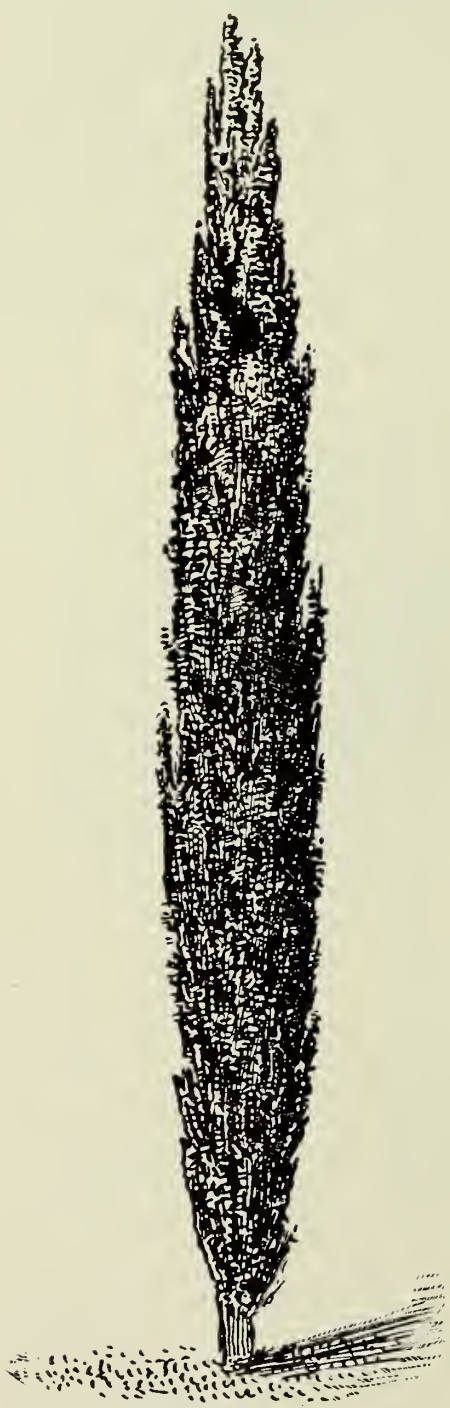

FIGURE 11.—Lombardy poplar (*Populus nigra italixa*)

Azaleas are low-growing bushes with small leaves and are classed as evergreens. They are covered in the early spring with a mass of brilliant blooms, almost startling in appearance. They may be obtained in lilac, pink, red, and white shades. After the blooms have fallen, the foliage is ornamental for the remainder of the year. They are most appropriate at the front of buildings or scattered throughout the grounds, being extremely effective. The only drawback is the price, which may be found rather high. However, if it is at all possible, a few pink or red azaleas should be included among the evergreens which are planted near the entrance to the main building, as naturally the most money should be spent on this locality.

Hydrangeas, while not evergreens, nevertheless remain in flower for a very long time and while in bloom are very colorful.

Rhododendrons may be secured in a variety of shades; and the flowers, which appear in the early spring, stand out against the dark-green background.

The dogwood in red and white is very showy when in bloom; and there are other varieties of flowering shrubs which are a source of brightness.

Well-trimmed hedges are still in favor and ornamental. Trimmed boxwood in other locations, however, is very stiff and gives an extremely formal and undesirable effect. Still worse are grotesquely shaped box trees placed at regular intervals along walks or at the fronts of houses. Box, however, is very beautiful if allowed to grow in its natural way, untrimmed, and it increases in value every year.

The treatment of a roadway, of course, will depend on many features. It is well to plant the trees with a certain symmetry, but with no fixed design. If evergreens are chosen, they should be of different varieties to avoid monotony by virtue of their different heights and colors. One should be particularly careful not to give the grounds the appearance of a cemetery, which will happen if stiff evergreens are used too freely. Among the stiff varieties we might mention trimmed box trees, Chinese arborvitæ, American

FIGURE 12.—Canadian hemlock (*Tsuga canadensis*)

arborvitæ, Irish juniper, trimmed privets, Greek junipers, and red cedars. A favored plan is to put a clump of evergreens at each side of the road at the main entrance, placing the taller varieties in the middle. If deciduous trees are already in this location, splendid effects may be secured by placing clumps of rhododendrons under these trees at the entrance. Clumps of the rhododendrons under the deciduous trees along the roadways are also very effective.

In Figure 5 the border planted along the side of the roadway is a little too set and formal to meet with modern ideas, if it is carried out for any great length. The arrangement of the trees on the grounds,

around the house, and at the gate posts is excellent, illustrating some of the points which have been discussed. The border would probably be better if its formality were broken by the use of some irregularly shaped trees such as the American holly, large specimens of yew, or Japanese holly, instead of the Koster's spruce shown at regular intervals in the design.

Many institutions have somewhere about their fronts one or more flights of stone steps. These are usually unsightly but afford a splendid opportunity for landscape gardening. Very pleasing effects can be secured by setting out a variety of low-growing evergreens on the terraces alongside such steps. For this purpose, the low-growing junipers, such as the purple-spreading juniper, *Juniper tamarisci-*

FIGURE 13.—Drooping andromeda (*Leucothoe cataesbaei*)

folia, and the small specimens of the Pfitzer juniper will be very useful. For contrast with these may be massed specimens of *Euonymus japonicus*, dwarf pine, and other low-branching varieties of evergreens. The arbutus shrub (*Abelia*) mingles well in these groupings if young specimens are selected.

The aim here should be to have a very low, flat, solid mat of evergreens, irregularly arranged so far as one side is concerned, but the same arrangement duplicated on the opposite side. The mat should not be of the same width along its entire length but varied, giving a curved border, symmetrical on each side.

EVERGREENS TO PLANT ON SHADY BANKS

It is difficult to get shrubbery to grow on shady banks, and for this purpose the following are recommended: Rhododendron; American hemlock; drooping Andromeda, an evergreen, spraylike plant; Japanese spurge, a very attractive low evergreen plant; and periwinkle. Honeysuckle is much used to cover banks and grows fairly well in shady places. Of all the varieties, woodbine is probably the most attractive.

A very economical method of concealing an ugly building is to set out a row of Lombardy poplars at fairly close intervals, to form a screen which will obscure the building from the point on the grounds

FIGURE 14.—Color contrast obtained from different evergreens

from which it is most noticeable. These trees are very cheap and are rapid growers. They might be replaced at a later date with some of the more handsome and expensive evergreens skilfully blended, but for quick and economical effects the Lombardy poplar can not be surpassed.

The trees should not be planted strictly in straight lines, but staggered slightly and clumped at the ends of lines of setting or other places to avoid stiffness in design.

On large waste banks on which grass can not be grown or cut, the ordinary Japanese barbery (*Berberis thumbergii*) gives quick and satisfactory results. It has abundant red berries and the foliage turns red in the fall; the plant grows well without attention and is cheap to install. Where funds are very low, Lombardy poplars can be used as you would set out evergreens alongside a building. Combined with hydrangeas (*Paniculata grandiflora*) at their bases they give a pleasing effect. Hydrangeas are useful in general in front of buildings and around the grounds to give a color contrast with the evergreens.

Large specimens will give a satisfactory appearance immediately, and are extremely effective. However, using plants of this size is expensive as they are high-priced on account of the length of time which has been required to produce them. More economical effects can be obtained, if funds are low, by using several smaller shrubs; for example, three smaller specimens can often be secured at a total price of about one-third the cost of a large bush and will when grouped together cover as much area and produce almost as good effect.

In estimating the number of plants required for the front of a building, consider that if you are specifying an evergreen of 24 inches spread there will be slight interlocking of its branches; in other words, a 24-inch plant will not cover 24 inches of wall space. It is always best to buy a few more than the measurements call for, because when the actual arrangement is made it will usually be found that additional plants are needed to get the effect desired.

DATA ON PAINTING

Amount of paint required.—In estimating the amount of paint required for a given piece of work, a number of factors must be taken into consideration, the most important of which is the nature of the surface to be covered. Light tints do not go as far as darker shades, and thick paint does not spread over as much surface as the thinner paints. Estimates as to the area which a gallon of paint will cover vary considerably in the different tables which are printed from time to time. The following figures are only approximate at best and refer to 1 gallon of paint and one coat:

Material	Square feet
Brick	300
Smooth concrete	325
Smooth board surfaces	600
Smooth metal, such as water tanks	700
Walls and ceiling, sized	400

The second coat will probably paint about 15 per cent larger area than the first and the third about 10 per cent more than the second.

To produce satisfactory results, three coats are usually required.

A gallon of varnish will cover about 400 square feet of woodwork, one coat.

Amount of labor required to apply paint.—The amount of time necessary to put on the paint depends largely upon the nature of the work. Plain areas, like ceilings, walls, and floors, can be quickly covered, but woodwork, stair railings, baseboards, and window-sashes take much longer. It is usually estimated that a good painter can give about 1,000 square feet of plain walls or floors one coat in a working day. The time demanded for doors and windows will depend upon the size of the openings, the complexity of the woodwork trim, the amount of sash, and so many other factors that estimates are of but little value.

The figures above given are for lead and oil work, and they do not include the time required to mix the paint, dust off the surfaces, sandpaper, putty, cover up articles in the room, or to erect or remove scaffolding, all of which must be given due consideration in figuring the probable expense of painting any given building.

Sabin, on Structural Metal Painting, issued by the National Lead Co., states that the New England State Master Painters' Association reports that five-eighths of a gallon is an average day's work in house painting. I have known a good painter to finish a 10-room house and garage in 10 days, utilizing 12 gallons of paint—an average of 1.2 gallons per day.

The time and labor required to prepare paints can be greatly lessened by buying white lead in more or less liquid form, which greatly simplifies the mixing process.

Attendants employed in painting should be warned to wash the hands carefully before eating, and some experienced painters do not touch their food with their hands when eating their lunches, holding the sandwiches or other food in the original paper wrappings.

Brick walls.—Old brick walls are difficult to paint and require careful preparation in the matter of cleaning and the removal of various forms of dust, scale, and dirt. If the walls are badly blackened, it may be necessary to scrub them with a strong soap solution. This should be well rinsed off and the wall allowed to dry before attempting to apply the paint.

In paint work generally putty should be used after the first coat rather than before. This applies to brick walls or floors and the like.

Painting cement surfaces.—It is very necessary that new work be allowed to dry out thoroughly before attempting to cover it with paint. This may take several months, possibly longer, depending upon circumstances. It is advisable to neutralize the natural alka-

linity of the material by applying a liberal coat of 5 per cent solution of hydrochloric acid, which must be immediately rinsed off thoroughly and then sufficient time should be allowed for the wall or floor to dry.

Radiators.—The best time to apply paint or finish to radiators is when they are warm.

Formulas for paints.—The following formulas are promulgated by the Supervising Architect of the Treasury Department and will be found very satisfactory:

1. PAINT FOR OUTSIDE WOODWORK

Coats	Pigment	Oil	Turpentine	Drier
	Pounds	*Gallons*	*Gallons*	*Pint*
Priming	100	5	2	1
Body	100	2½	2½	1
			Quart	
Finish	100	4½	1	1

Pigment for outside work shall be composed of 80 per cent white lead paste and 20 per cent zinc oxide paste and the necessary tinting colors.

2. PAINT FOR INSIDE WOODWORK

Coats	Pigment	Oil	Turpentine	Drier
	Pounds	*Gallons*	*Gallons*	*Pint*
Priming	100	3½	3½	1
Body	100	2½	2½	1
VARNISH				
Finish	100	1¼	1½	½

Pigment for inside work shall be composed of 65 per cent white lead paste and 35 per cent zinc oxide paste and the necessary tinting colors.

3. RADIATOR ENAMEL

Radiator enamel shall be zinc oxide ground in damar varnish, thinned with pale baking varnish and turpentine, and shall be tinted as required. The enamel shall be free from mineral spirits, shall cover well in two coats, and dry with a good gloss. When possible, heat shall be turned on after each coat. In any case ample time shall be allowed for undercoats to harden thoroughly before being recoated.

4. PAINTING PLASTER

Coats	White lead paste	Linseed oil	Turpentine	Drier
	Pounds	*Gallons*	*Gallons*	*Gallons*
Sizing coat	100	3	5	1
				Pint
Second coat	100	2	3	1
Third coat	100	2	3	1
Finish coat	100	4	½	1

In any of the above mixtures zinc oxide paste not to exceed 20 pounds may be substituted for an equal amount of white lead.

(NOTE.—All bare plaster surfaces that are to be painted shall be given a preparatory wash of 3 pounds of zinc sulphate to 1 gallon of water, and allowed to dry before sizing.)

5. ENAMELS FOR INTERIOR PLASTER WALLS

For finish coat add 1½ gallons of turpentine and 1½ gallons of varnish to each 100 pounds of white lead.

6. WATERPROOF PAINT ON WALLS

This office has no formula for "Waterproof paint on walls." There are numerous brands of ready-mixed paint in the market, specially prepared for painting brick, cement, concrete, stucco, and stone walls. The following are some of the well known brands;

"Barreled Sunlight Granolith." United States Gutta Percha Paint Co., Providence, R. I.

"Cemcoat." L. Sonnerborn Sons (Inc.), 114 Fifth Avenue, New York, N. Y.

"Driwal." The Billings-Chapin Co., East Fortieth Street and New York Central Railroad, Cleveland, Ohio.

"Liquid Konkerit." Toch Bros., 443 Fourth Avenue, New York, N. Y.

"R. I. W." Toch Bros., 443 Fourth Avenue, New York, N. Y.

"Stone Tex." The Truscon Laboratories, Detroit, Mich.

7. PAINT FOR FIRE ESCAPES, IRON FENCES, ETC.

First coat.—Raw lead, dry, 25 pounds; raw linseed oil, 1 gallon; turpentine, ½ pint.

Second and third coats to be as specified under paragraph 1 for body and finish coats.

8. PAINT FOR CEMENT FLOORS

Pigment	Oil	Spar varnish	Turpentine	Drier
	Gallons	*Gallons*	*Gallon*	*Pint*
100 pounds	4½	2	½	1

Pigment for cement floors shall be composed of 65 per cent white lead paste and 35 per cent zinc oxide paste and the necessary tinting colors.

9. PAINT FOR SMOKESTACKS

One coat of red lead paint and two coats of best quality graphite paint. The red lead paint to be as specified for first coat under paragraph 7.

10. ENAMELS FOR INSIDE WOODWORK

Enamel paint shall be zinc oxide ground in varnish and thinned with varnish and turpentine. Enamel paint shall have the working properties and water resistance specified for interior varnish (see Federal Specification No. 22), and shall have a bright luster. White enamel shall be pure white. Light-colored enamel shall be made with pale varnishes. Work specified to be enameled shall be painted three coats as specified for inside woodwork, paragraph 2, then be given two coats of enamel paint of the desired color.

Specifications for varnish.—The following specifications for varnish are issued by the Bureau of Standards, Standard Specification No. 22:

The varnish shall be suitable for general interior use, including both rubbed and unrubbed finish, exclusive of floors. It must be capable of easy application with a brush in the ordinary manner according to the rules of good standard practice, must flow out to a good level coat free from runs, sags, pits, or other defects, and dry with reasonable promptness to a hard, somewhat elastic glossy coating which can be rubbed in 48 hours or less. The manufacturer is given wide latitude in the selection of raw materials and processes of manufacture, so that he may produce a varnish of the highest quality. The varnish must meet the following requirements:

Appearance: Clear and transparent.

Color: Not darker than a solution of 3 g. of potassium dichromate in 100 c. c. of pure sulphuric acid, specific gravity 1.83.

Flash point (Closed-cup): Not below 30° C. (85° F.).

Nonvolatile matter: Not less than 45 per cent by weight.

Set to touch: In not more than four hours.

Dry hard: In not more than 24 hours.

Dry to rub: In not more than 48 hours.

Toughness: Film on metal must stand rapid bending over a rod 3 mm. (⅛ inch) in diameter.

Working properties: Must have good brushing, flowing, covering, leveling, and rubbing properties, and must show no impairment of luster or other defect when used where natural or illuminating gases are burned or when subjected to air currents during the process of drying or application.

Water resistance: The dried film must stand application of cold water for not less than 18 hours without whitening or showing other visible defect.

Care of paint brushes.—Good paint brushes are expensive, and unless they are properly preserved between the intervals of use they quickly become worthless. A good method is to wrap the bristle part of the brush snugly in a piece of newspaper and submerge it in a solution

of equal parts of turpentine and linseed oil. Another method is to bore a small hole through the handle of the brush at the proper height and run a stiff steel wire through it so that the brush may be suspended without touching the bottom at the proper height in the above-named solution, which should come just to the top of the bristles. Brushes should be kept in a cool place and the container should be covered as well as possible to prevent unnecessary hardening of the turpentine and oil mixture.[8]

Varnish brushes may be preserved in exactly the same manner by wrapping the bristles carefully in newspapers and submerging them in the oil and turpentine solution. The compound of turpentine and oil will harden slowly and may have to be renewed if the brushes are left in for a number of months. Another method for varnish brushes is to wash them out thoroughly in benzene and then allow them to dry. Varnish brushes are also at times kept in varnish in a tightly closed container and suspended so as not to touch the bottom.

CARE OF HANDHOLES AND MANHOLES IN HEATING BOILERS

The following instructions regarding the care of handholes and manholes in heating boilers are contained in a circular issued by the Office of the Supervising Architect, September 20, 1929:

It has been necessary in a large number of cases to make costly repairs to heating boilers, and in some cases to install new boilers, as result of damage caused by leaking handholes and manholes in boilers or the down-draft furnaces in connection with them. This condition is easily and cheaply prevented and can not longer be tolerated. Hereafter when inspectors report leaking handholes and manholes those responsible for the care of the boiler will be called upon for an explanation.

It is required that hereafter all handholes and manholes in boilers and the down-draft furnaces attached to them be opened and inspected once a year and oftener if necessary and new gaskets installed if necessary. Generally this is to be done immediately after the close of the heating season. Also it is required that all handholes and manholes shall be carefully inspected at frequent intervals for evidence of leakage.

This office prefers that bids be obtained from those skilled in such work for furnishing and installing new gaskets; but if bids can not be obtained and the work can not be done under section XI of Instructions to Custodians, then this Office will supply asbestos gaskets and flake graphite in which to bed them on custodian's requisition. If you can ascertain the correct size of gaskets without removing the cover plates you should make requisition at once; but if not, immediately after the close of the heating season (or as soon as the boilers can be spared) the covers are to be removed and the correct sizes ascertained and the gaskets requisitioned.

If in doubt, after covers are removed, support a piece of paper, backed with stiff cardboard, on the back side of the opening and trace the shape and size of the opening on the paper with a pencil.

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[8] Before putting the brushes away, the excess paint should be worked out in the paint pail as much as practicable. If the brushes are not to be used for a long time, they may be washed thoroughly in gasoline and kept in a dry condition.

All handhole and manhole openings are oblong, and the nominal sizes of the gaskets are the two axes of the opening in the steel plate. The openings are sometimes flanged inward and sometimes flat, but in either case the lengths of the two axes, in the clear inside the opening, are the nominal size of the gasket. Thus a "4-inch by 6-inch" gasket is for an opening having short axis of 4 inches and the long axis of 6 inches.

Handhole gaskets are always flat, about 3/16-inch thick by about 3/4-inch wide. Manhole gaskets are generally flat, about 1/4-inch thick by about 1-inch wide. However, manhole gaskets are occasionally round or of some other unusual cross section.

Requisitions should give the size and the number of openings of each size; whether gaskets are flat or of other unusual cross section (if flat it is not necessary to give width unless there is a particular limit to the width of gasket that can be used, but if other than flat the cross section must be given, or better, if possible, attach a piece of the old gasket to requisition); the name of manufacturer and number of boiler as it appears on the front; and, if templates are made, as above referred to, the name of building, city, and number of openings of that size to be noted on the templates attached to requisition. Also requisition a can of flake graphite. The smallest can is 1-pound size, which is sufficient for two boilers for a year or more.

In placing gaskets the surface of the cover plate and the inside of the boiler plate, between which the gasket is placed, must be thoroughly cleaned of scale, rust, etc., and made as smooth as possible. A flat file of medium fineness is convenient for smoothing off the inside of the opening. A quantity of graphite is mixed with oil of the consistency of light automobile crank-case oil to a thick paste and a small amount of the paste spread evenly over the side of the gasket against boiler metal, no paste to be placed on side against cover plate. The cover, yoke, bolts, etc., are carefully placed and the nuts are drawn up tight. At intervals of a day or so draw them up again if possible or if leaks appear. After the boiler is heated up they will invariably have to be drawn up once or twice, else they will leak under heat.

If asbestos gaskets furnished are hard and stiff, soak them in oil of same grade as used for mixing graphite for a couple of days to soften them before using.

If yoke nuts are rusted in place when you attempt to remove them, keep them saturated with kerosene for several days. As a last resort cut the nuts and get new nuts, bolts, etc., as required. Generally the bolts do not extend through the cover plates but slip under lugs cast in the cover plate, and a replacement bolt can be secured at any hardware store and the head ground down on an emery wheel to fit.

In some cases a square-head bolt extends through the cover and has a lead washer inside the cover. If a new washer is needed, any mechanic can make one out of a piece of sheet lead. Occasionally a tapered head bolt, without washer inside extends through the cover and replacement bolts are hard to secure. If the thread end only is damaged, a new thread end can be welded onto the old tapered end with gas or electric weld. If new tapered end is required, it is generally better to requisition a new cover plate, yoke, bolt, etc., complete. New parts would not be like the old one, except as to size of cover, but would be of standard type in current use.

No gasket is to be used under the nut, outside the yoke. A steel washer may be used if desired, but it must be solid, not split like a lock washer.

Generally asbestos gaskets can be cleaned and reused a second, third, or fourth time, depending upon their condition when removed. When rubber gaskets are found they are not to be reused.

Rubber gaskets are not to be used on manholes and are to be used on handholes only temporarily and in very unusual cases where the metal is so badly corroded that asbestos gaskets can not be made tight. In such cases asbestos gaskets must be tried faithfully first. Rubber gaskets may be cut from the sheet rubber packing which has been furnished custodians generally. A paper template is made and tried until a good fit is obtained and the template is traced on the rubber with a soft pencil. The rubber is laid on a smooth surface and the gasket cut out, in one piece, with a very sharp knife. It is set in graphite paste the same as asbestos gaskets. If the metal surfaces are smooth one thickness of one-eighth inch may be sufficient, but if rough and corroded, double thickness of rubber will probably be necessary.

Much care is necessary in the inspection of handholes and manholes for leaks, especially those in the path of soot and ashes, which cling to them. Care must be taken to see that handholes inside the brick setting, etc., are not overlooked. The soot and ashes should be scraped from around the edge of the opening and carefully examined for a trace of moisture, which in itself is sufficient to destroy the plates. Obviously only considerable leaks can be detected while the boiler is hot, or even warm. These examinations are therefore important during the summer or at other times while the boiler is not in use, when these slight leaks can be detected.

When leaking gaskets are found they must be made tight at once by tightening up or a new gasket must be installed if necessary. Under no condition must any compound be placed in the boiler or paint or other material placed on the outside of opening to stop leaks.

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